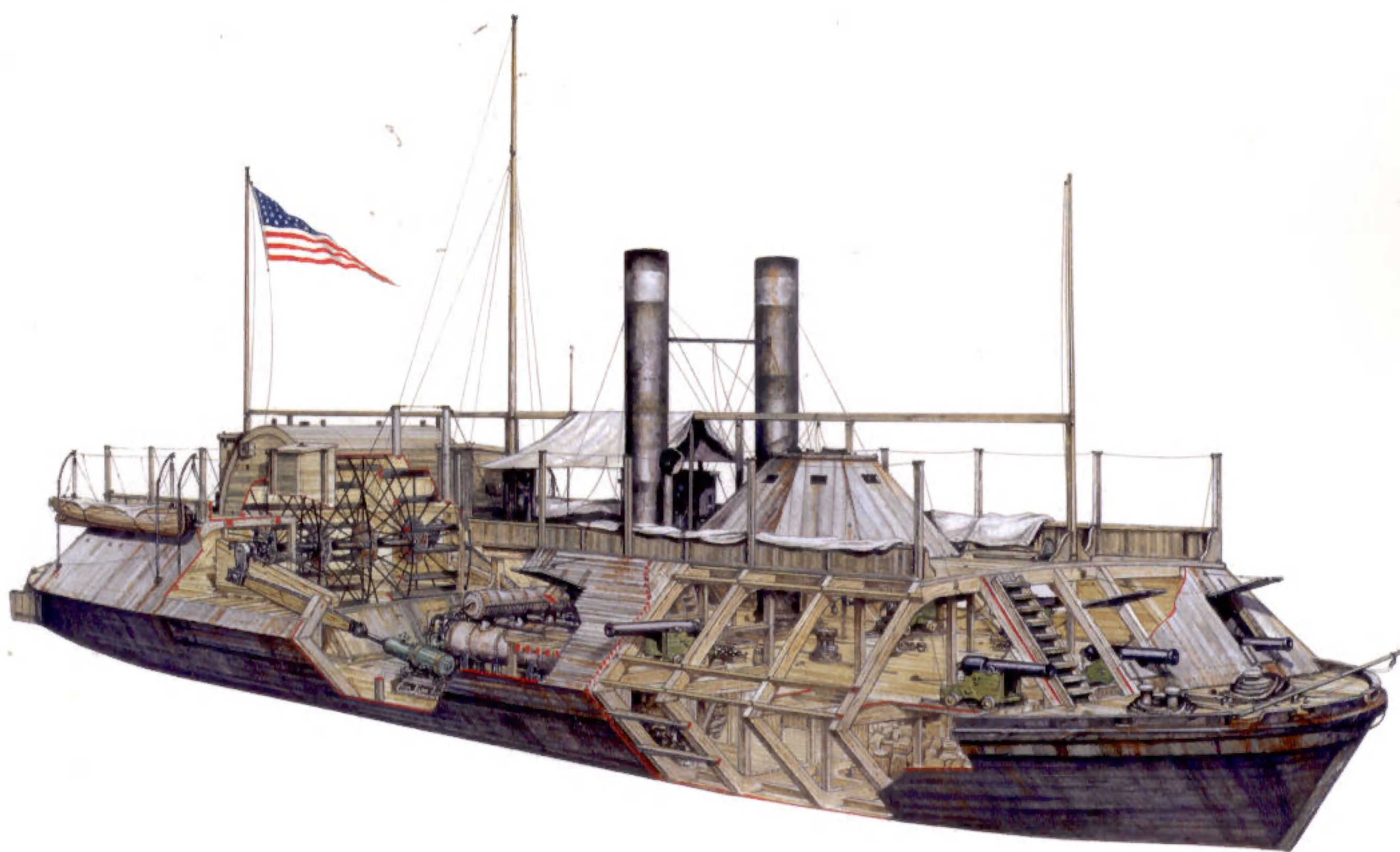


Union River Ironclad 1861–65



Angus Konstam • Illustrated by Tony Bryan



ANGUS KONSTAM is an experienced Osprey author with over 20 books in print. Formerly the Curator of Weapons in the Royal Armouries at the Tower of London, he also served as the Chief Curator of the Mel Fisher Maritime Museum in Key West, Florida. His maritime titles for Osprey include *New Vanguard 45: Union Monitor 1861–65* and *New Vanguard 49: Mississippi River Gunboats of the American Civil War 1861–65*. Angus lives in London, where he combines a freelance museum consultancy business with a career as a historian and writer.



TONY BRYAN is a freelance illustrator of many years experience. He initially qualified in Engineering and worked for a number of years in Military Research and Development, and has a keen interest in military hardware – armor, small arms, aircraft and ships. Tony has produced many illustrations for partworks, magazines and books, including a number of titles in the *New Vanguard* series.

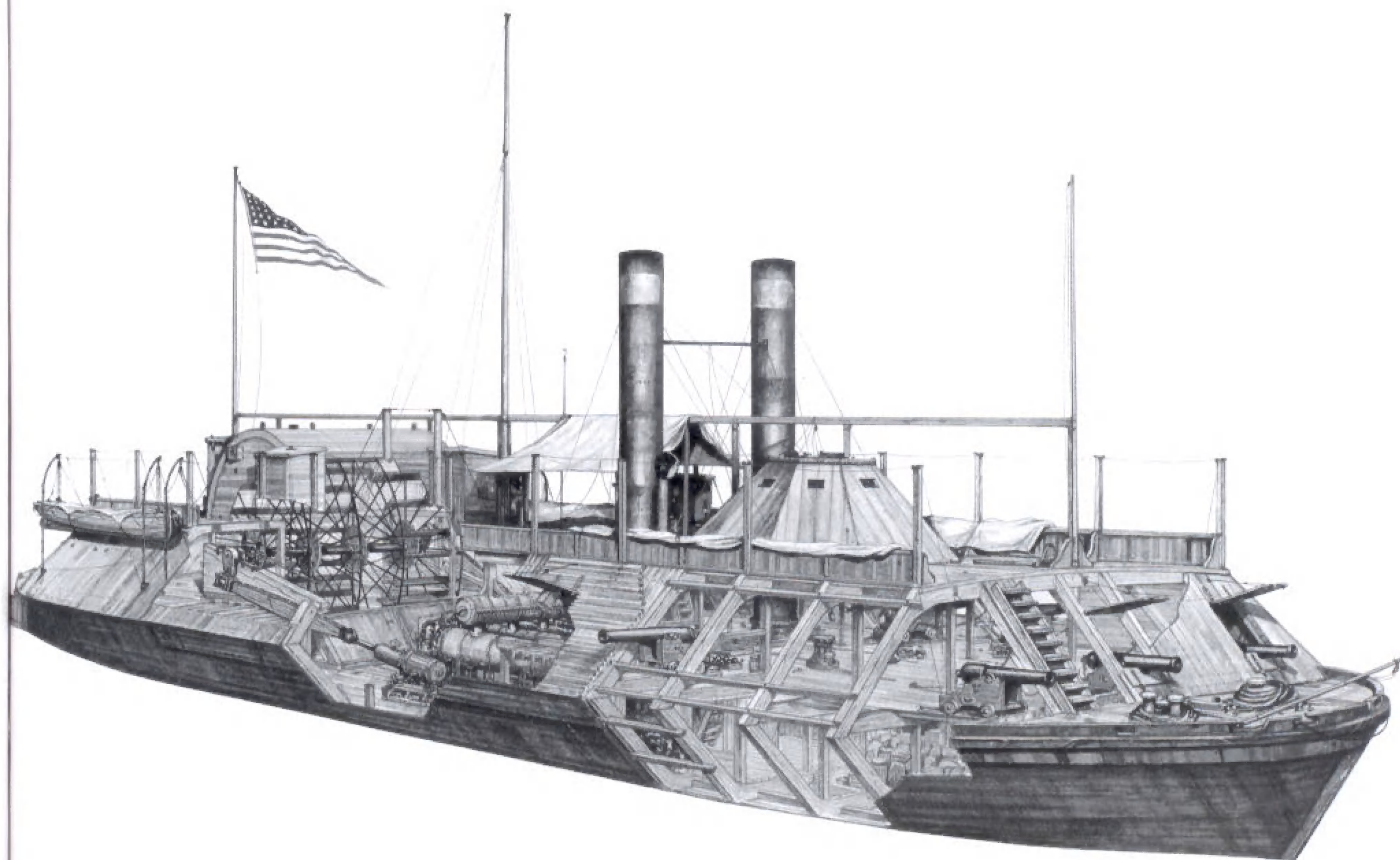
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Tony Bryan, 4a Forest View Drive, Wimbourne, Dorset, BH21 7NZ, UK

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CHC = Clyde Hensley Collection, Jupiter, FL

USNHC = US Naval Historical Center, Washington DC

UNION RIVER IRONCLAD 1861-65

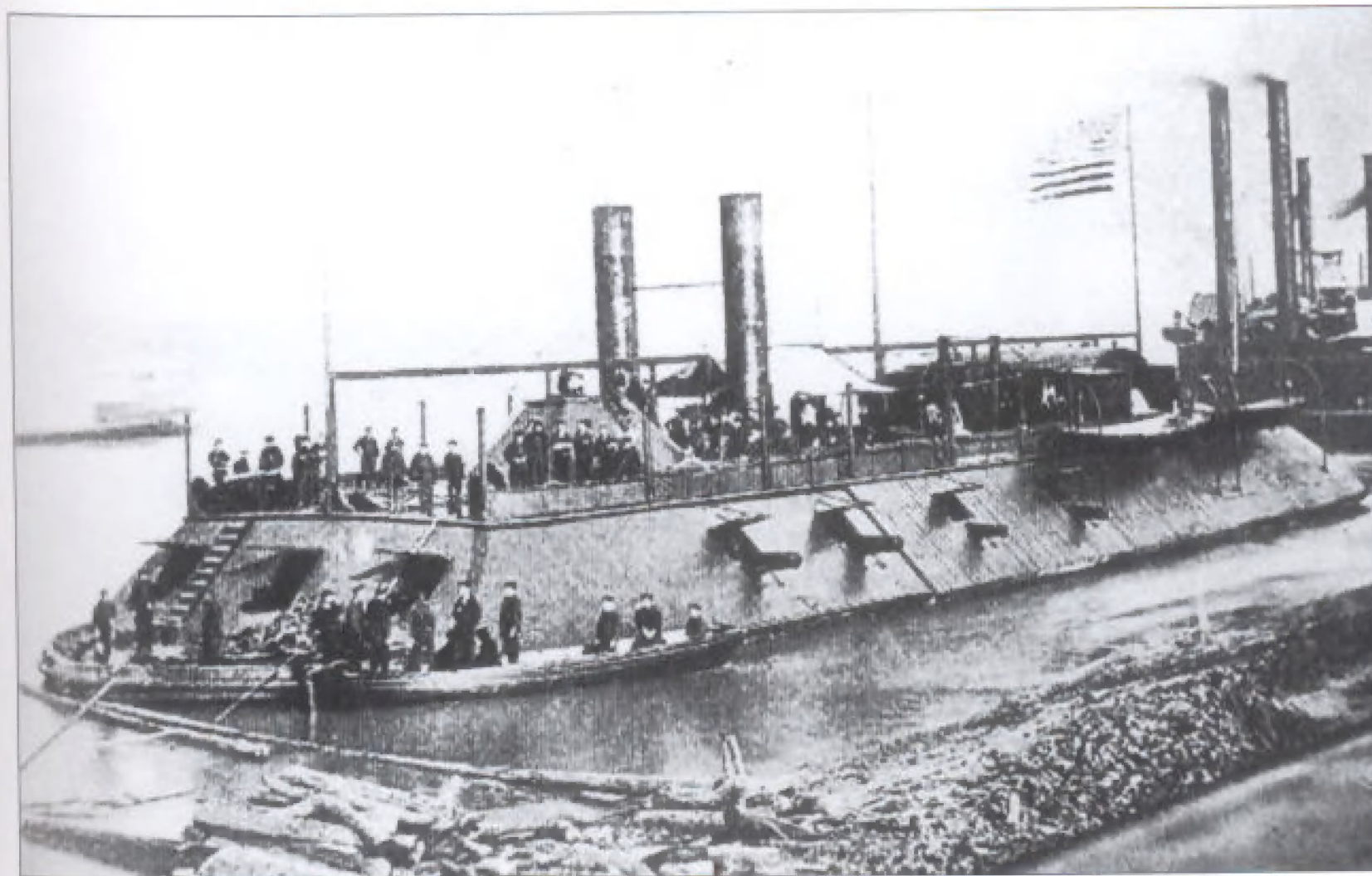
INTRODUCTION

The books in this series covering the warships of the Civil War have described a range of strange-looking vessels, both iron and steel, Confederate and Union. Of these, no group of ships looked more unusual than the ironclads built by the Union to fight on the Mississippi River and its tributaries. Using the shipbuilding methods and designs developed for the commercial riverboats of the region, Union naval architects produced a type of vessel that was uniquely suited to the Mississippi theater. These river ironclads combined the attributes of contemporary mercantile riverboats with the protection of an armored iron casemate, and they carried a formidable array of the latest smoothbore and rifled guns. Although much is made of the famous battle between the USS *Monitor* and the CSS *Virginia* (formerly the USS *Merrimac*) in March 1862, these were not the first ironclads to see action during the Civil War. Instead, the real pioneers were the ugly, cumbersome black warships of the Union Western Gunboat Flotilla who contested the waters of the Mississippi River bordering Confederate territory, and who attacked Fort Henry and Fort Donelson guarding the Tennessee and Cumberland Rivers in February 1862.

These ironclad "turtles" lacked the glamor of the USS *Monitor*, and apart from a brief campaign fighting the CSS *Arkansas* around Vicksburg, Tennessee, none saw action in a dramatic engagement with other ironclads. Even the fighting against the *Arkansas* was less than glorious for the Union fleet, as it resulted in the

near-loss of the ironclad USS *Carondolet*, and the temporary humiliation of the rest of the Western Gunboat Flotilla. Despite this, the ironclads on America's western waters were the real arbiters of victory in the Civil War. Without them the Union would have been virtually unable to reduce the Confederate forts guarding the Mississippi River and its main tributaries (the Cumberland, Tennessee, Yazoo and Red Rivers), and it would have been

The City class ironclad USS *Cairo*, photographed on the Mississippi River in 1862. It has been suggested that the port is Cairo, Illinois, the forward base used by the Navy for the attacks on Fort Henry, Fort Donelson, and Island No. 10. Like most of her class, her casemate was ringed with up to 16 heavy guns. (USNHC)



hard-pressed to support the advance of Union armies into the Confederate heartlands in the Western Theater.

Above all, the Union river ironclads which saw active service in the Mississippi campaign proved superior to the array of forts, heavy artillery, gunboats and torpedoes (mines) which the Confederates relied upon to block any Union advance down the strategically vital artery of the Mississippi River. Although they lacked the thick armor found on contemporary ocean-going Union monitors or even on most Confederate ironclads, they were well suited to their environment, and their fragility was more than compensated for by their sheer versatility. Above all, they proved to be highly effective strategic tools, a crucial element in the concerted attack by land and river which split the Confederacy in two and decided the outcome of the war.

DESIGN

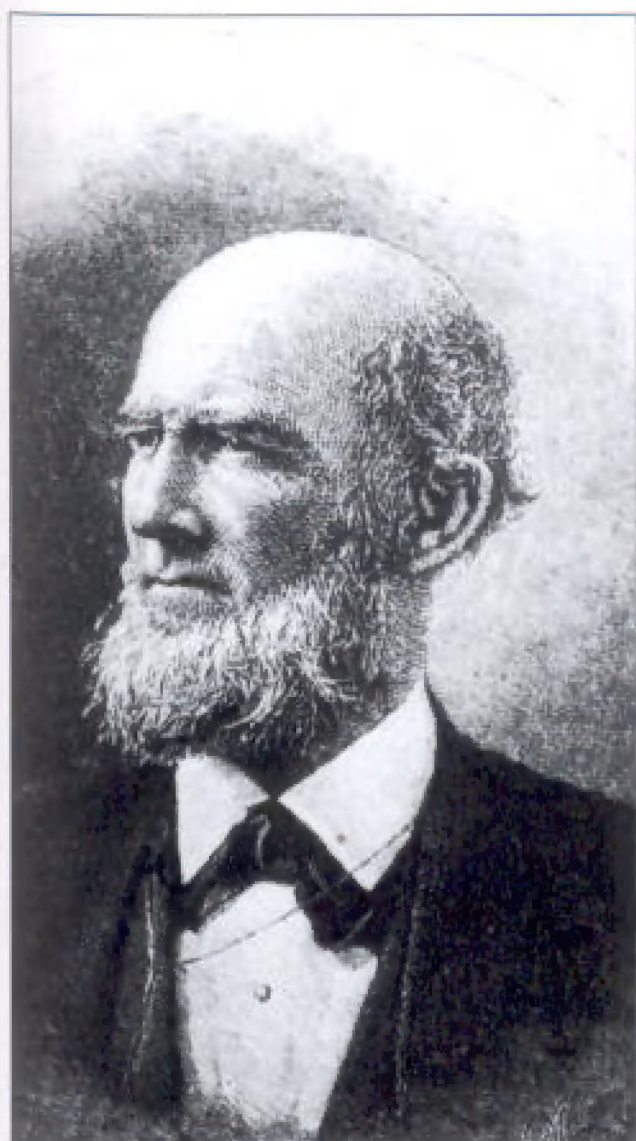
Background

The strategic need for a Union fleet on the Mississippi River and its tributaries has already been dealt with in this series (Osprey New Vanguard Series 49: *Mississippi River Gunboats of the American Civil War 1861–65*), so to avoid repetition we will only provide a brief summary of the situation. The “Anaconda Plan” devised by General Winfield Scott, President Abraham Lincoln, and Secretary of the Navy Gideon Welles was a strategy that envisioned the slow strangulation of the Confederacy, and the reduction of the ability of the secessionist states to wage war. It involved two main elements: the naval blockade of the Southern coastline, from the Potomac River to the Rio Grande, and the division of the Confederacy in two along the axis of the Mississippi River. The latter element called for a drive by land and naval forces southwards from Illinois and Missouri (supported by ancillary drives into Kentucky and Tennessee along the Cumberland and Tennessee Rivers), and a second assault from the Gulf of Mexico. This would involve the capture of New Orleans to seal off the river, then it would continue northwards to link up with the Union forces heading south. By wresting control of the Mississippi River from the South, the Union would split the Confederacy in two, and deny it access to the produce, resources and manpower of Texas and the trans-Mississippi regions.

What the strategic plan failed to take into account was the lack of resources to carry out the task. Although the United States of

A Union seaman serving in the Western Gunboat Flotilla during the first years of the war. Although rarer on the Mississippi Theater than on the Atlantic coast, a number of black sailors served in the US Navy during the war. (Author's collection)





St. Louis businessman and shipyard owner James B. Eads (1820–87) persuaded the government to commission him to build a flotilla of ironclad gunboats for service on the Mississippi River. He was duly appointed to the rank of captain, and became the chief naval constructor for the Western rivers. (Author's collection)

America was a burgeoning industrial giant in 1861, and most of this industrial capacity was concentrated in the North, it would take time for this to begin producing the weapons of war needed to put the Anaconda Plan into effect. Also, as the North lacked naval shipyards or even a naval presence in these Western rivers, the Union would have to build a fleet from scratch, and would have to rely on civilian contractors to build its ships. More than anything else, this would influence the design of the Union ironclads which would soon appear on the Mississippi River and its tributaries, and it would lead to the creation of a type of ship which was exclusively suited to the riverine environment of the Western rivers.

James B. Eads and the creation of a River Ironclad Flotilla

On April 29, 1861, just as the Secretary of the Navy Gideon Welles was considering how best to set about creating a “brownwater” navy on the upper Mississippi River, a letter arrived on his desk from James B. Eads, a shipyard owner and businessman from St. Louis, Missouri. It is worth describing its contents in detail, as it outlined the way the Anaconda Plan could be implemented on the Mississippi, and suggested the vessels needed to do the job.

Eads proposed establishing the Navy's base of operations at Cairo, Illinois, with guns and ships capable of controlling both the Ohio River and the upper Mississippi. He described the suitability of the town as a strategic base for land and river operations, pointing out it boasted rail and river links with the Union hinterland of Illinois, Indiana, and Pennsylvania. He went on to describe the vessels needed to undertake the conquest of the river:

“The Missouri Wrecking Company have one very strong boat, built originally for a snag boat by the United States, and purchased and altered for the purpose of raising steamboats sunk on the Mississippi. It is a twin boat, each hull of which is subdivided into seven water-tight compartments, and shot penetrating three or four of these would not sink her. She is abundantly strong for a complement of 32-pounders, and has four double-flued boilers and two independent engines to drive her. With \$2,000 or \$3,000 worth of cotton bales arranged properly upon her she could be made exceedingly effective for offense or defense. By using the steam pumps with which she is provided she could be kept afloat with twenty 32-pounder shot through her. With her armament on board she would draw about 4 feet. We never find less than 5 feet from Cairo to Memphis. The same company have two other boats, lighter than the above, provided with steam engines, which would be very effective in shoal water for similar purposes.”

This was the Submarine No. 7, a catamaran snagboat which would eventually become the USS *Benton*, ironclad flagship of the Western Gunboat Flotilla.

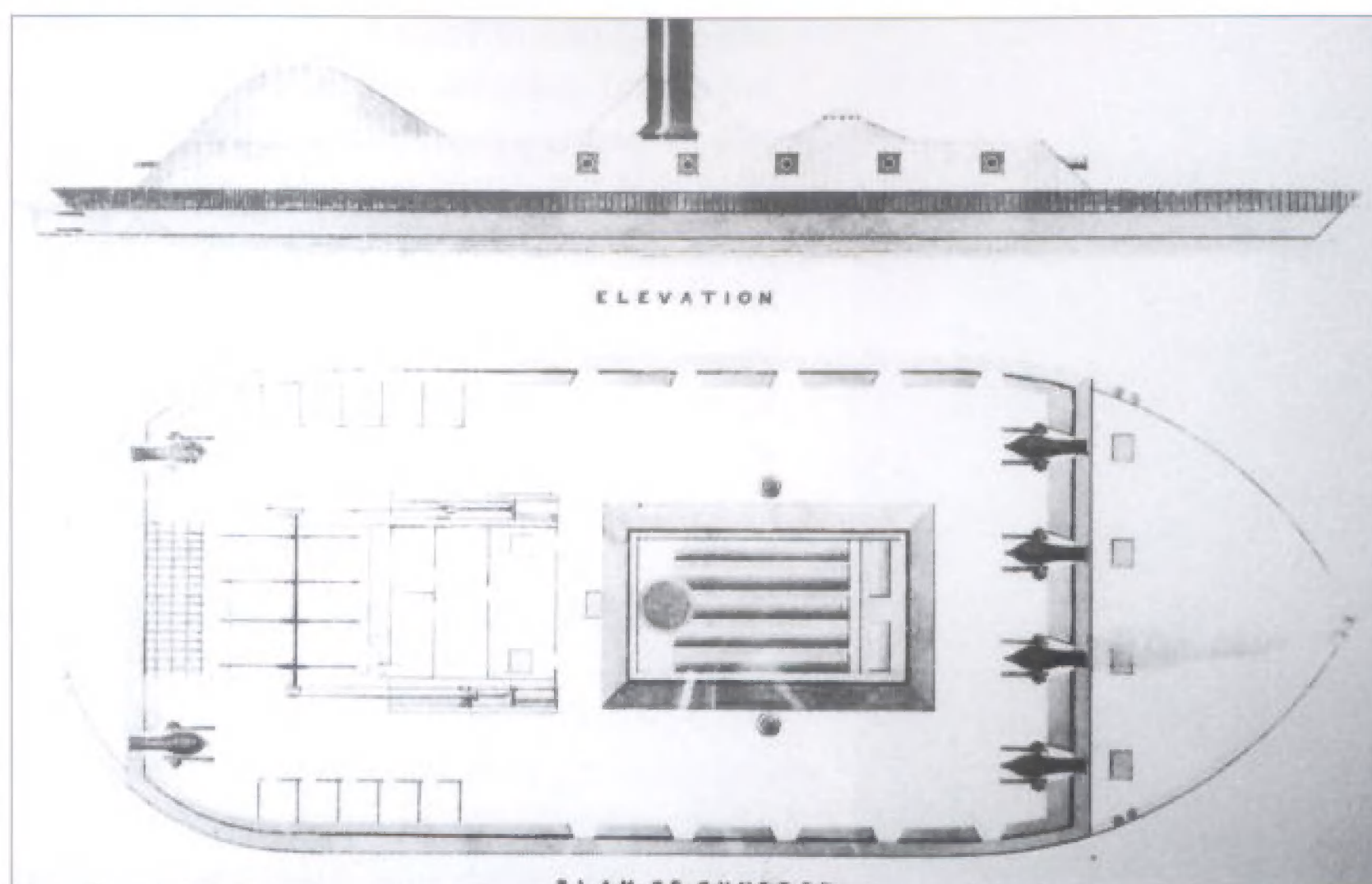
Welles was impressed by Eads' proposals, but he lacked the resources to undertake any naval building program in the West, as he was hard-pressed to find ships and men to put the coastal blockade of the Confederacy into effect. He therefore passed Eads' letter on to the Army (War Department). Secretary of War Simon Cameron was equally impressed by Eads, and on May 14 he wrote to Major-General McClellan, who commanded Union forces in the Western Theater from St Louis:

"Mr. James B. Eads, of St. Louis, has proposed as a means of defense and of active operations at Cairo and the rivers adjacent, the employment of the boats owned by the wrecking company of which he is a member, and has advised that said boats be taken by the Government and properly armed and equipped for that service. The Government here deeming very favorably of the proposition, but unwilling to decide positively upon the matter without the knowledge and approval of the general in command of that department, it is ordered that the subject be referred to General McClellan, who will consult with Mr. Eads and with such naval officer as the Navy Department may send out for that purpose, and then, as he shall find best, take order for the proper preparation of the boats."

Two days later Gideon Welles appointed Commander John Rodgers, USN, to St. Louis to advise McClellan on the creation of an Army-run "brownwater" fleet. His orders stressed the unusual inter-service nature of the task:

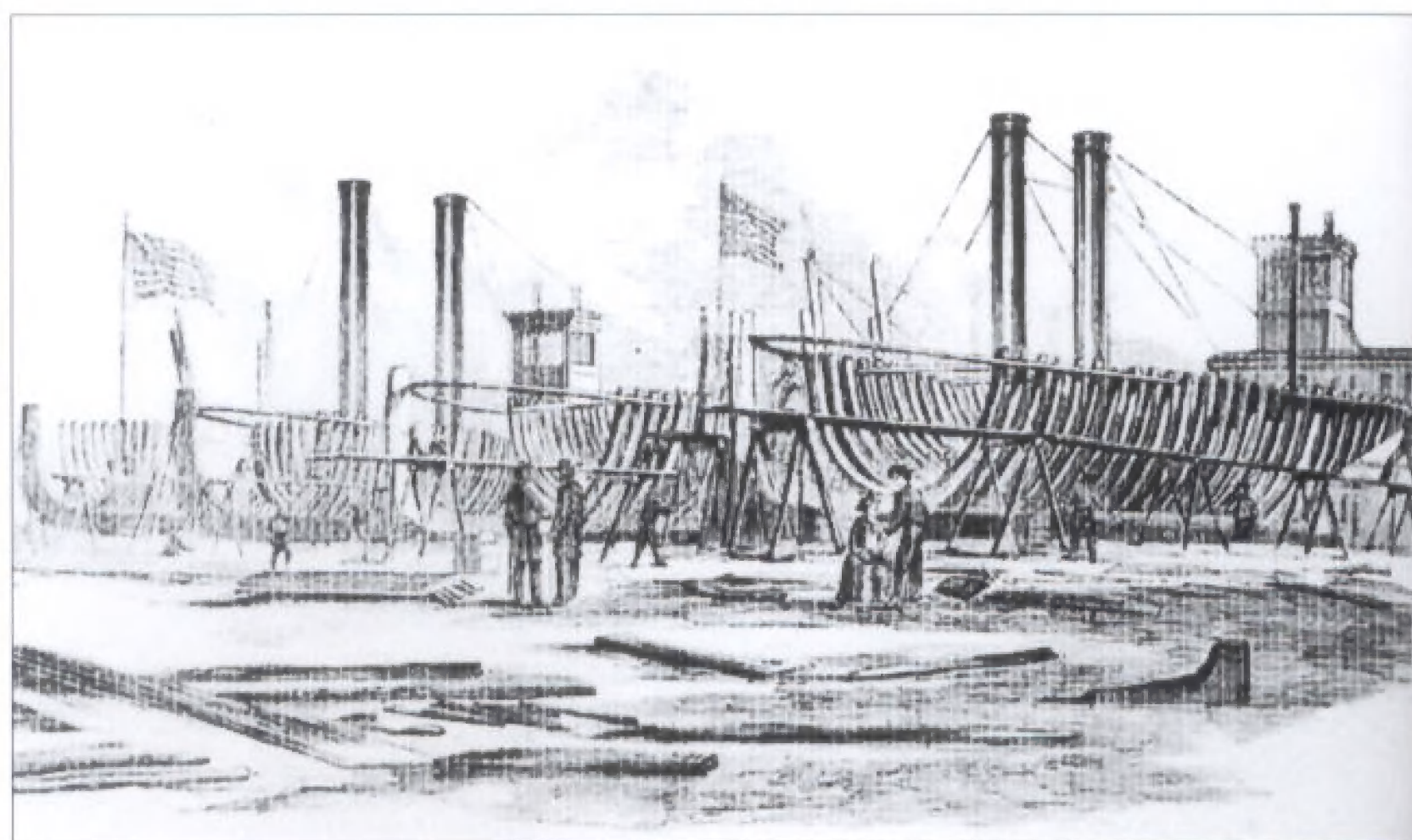
"This interior non-intercourse is under the direction and regulation of the Army, and your movements will therefore be governed in a great degree by General McClellan... He will give such orders and requisitions as the case to him shall seem necessary, you acting in conjunction with and subordinate to him. Whatever naval armament and crew may be necessary to carry into effect the objects here indicated, you will call for by proper requisition. Make your reports to this [Navy] Department."

Although McClellan was called East (and was replaced by Brigadier-General John C. Frémont), he accepted both Rodgers' advice to create a flotilla of river ironclads, and Eads' suggestion of establishing his forward base at Cairo, Illinois. By the end of May, Union gun batteries and fortifications had been put in place guarding the junction of the Ohio and Mississippi Rivers. The Union flotilla now had a secure forward base from which to operate. Rodgers met Eads, and together they considered how to set



James B. Eads' initial plans for the conversion of the snagboat Submarine No. 7 into the ironclad *Benton*. The plan shows the main gundeck, with officers' cabins immediately forward of the paddlewheel. (National Archives, Washington DC)

"Building the Eads Gunboats at Carondelet." Sketch and engraving drawn from a contemporary photograph. Reproduced from *Battles and Leaders of the Civil War, Volume 1*. The St. Louis riverside boatyard soon became one of the most important shipbuilding facilities in the Union. (CHC)





The building of a City class ironclad at Carondelet, Missouri. Four vessels can be seen, on two levels, facing bow to bow. All seem to be in a roughly similar stage of construction. Once finished, the ironclads would be launched sideways down the "marine ways" or runners leading to the Mississippi River, just to the left of the cameraman. (USNHC)

turned his attention to the plans for more powerful warships.

Unlike many naval officers, Pook realized that conventional warships had no place on the Upper Mississippi River. The wide, flat-bottomed river steamers which plied the river were ideally suited to their environment, even though they were incapable of weathering the rougher waters of the open sea. Pook worked with Eads and Rodgers to come up with plans for an ironclad warship which would use the standard configuration of these Mississippi riverboats as well as their paddlewheel propulsion systems, but which were designed to carry a powerful all-round armament, protected by an iron casemate. Pook elected to avoid vulnerable sidewheels, and instead to protect a centrally located paddlewheel by an armored casing, and by the warship's hull. As Rodgers wrote of the design: "If well handled, these boats will be most formidable adversaries." The Army approved the designs, and the first purpose-built ironclads constructed in the Americas were officially sanctioned as a weapon that would spearhead the Union's drive down the Mississippi River.

Pook's Turtles: Building the City Class

On August 5, 1861, Quartermaster-General Montgomery Meigs invited riverside shipyard owners on the upper Mississippi River to bid for contracts to construct seven shallow-draft ironclads based on the plans drawn up by Samuel Pook. These called for the production of vessels which were 175 feet long, had a massive 51-foot beam, and drew no more than 6 feet of water. The vessels would carry an armament of at least 13 guns: three in the bow, four on each broadside, and two more in the stern. The call for bids was little more than a show, as two days later the War Department awarded the contract to James B. Eads.

It has been suggested that the ironclads designed by Pook were based on Confederate designs such as the CSS *Virginia* (ex-USS *Merrimac*). Eads first submitted plans for an ironclad gunboat days after Fort Sumter, and in late June Pook based his plans on a pre-war design produced by Chief Naval Constructor John Lenthall, as well as on elements of Eads' plan. This became the basis for the City class design. It was impossible that either Pook or Eads knew about the CSS *Virginia*, but Pook and Lenthall were at least aware of the basic "floating armored battery" design used by

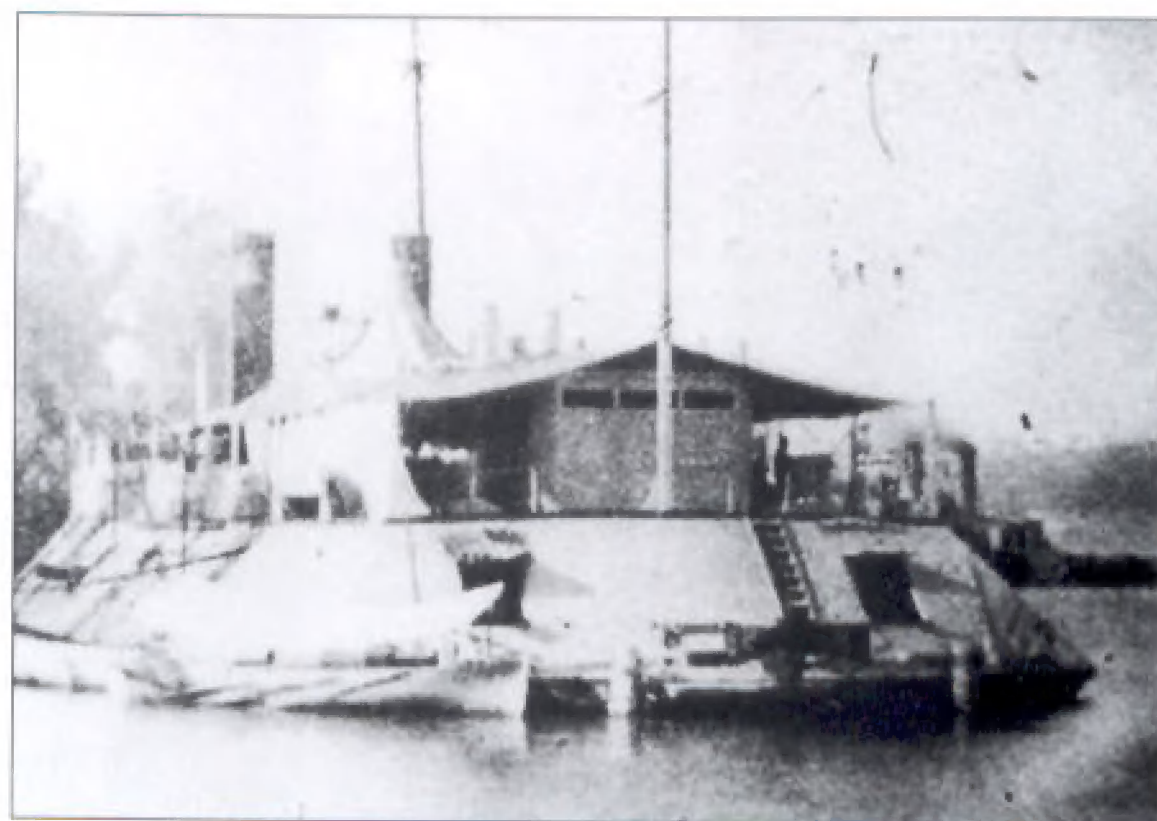
about the construction of an ironclad flotilla. The pair were joined by Naval Constructor Samuel M. Pook, whom the Navy Department had sent West from Washington to examine the facilities Eads was proposing to use. After Pook had approved Rodgers' selection of three steamers for conversion into wooden gunboats (they would become the *Lexington*, *Tyler* and *Conestoga*), the naval architect

the French in the Crimean War. This was the real inspiration behind the first river ironclads.

"Pook's turtles" (as the ships were nicknamed) had five 24-foot-long multi-flued boilers, each 3 feet in diameter, with a firebox beneath them. These sat in a cradle below the gundeck, together with the two Merrit engines, which sat at a 15-degree angle and powered a wrought-iron shaft and 7-foot cylinder with a 6-foot piston stroke. Two smokestacks (or "chimneys" to the rivermen) measuring 44 inches in diameter and 28-33 feet in length extended up through the gundeck and spar deck. The centrally mounted paddlewheel itself was 20 feet in diameter, and was mounted in a central recess in the hull towards the stern of the vessel, protected by a bulge in the casemate, covered in boiler plate. The hull itself was wooden, with an inner skin of 4- or 5-inch planks covered by a skin of smaller 2-inch timbers. The bilge (lower hull) sides projected from the bottom of the vessel to the waterline at a 45-degree angle, and from there they sloped back at the same angle up and inwards, rising 12 feet to the top of the casemate. The casemate itself formed a rectangle, with all four sides sloping inwards. It was covered with 3-inch planks, secured to a 4-foot solid timber base at the "knuckle," where the casemate met the bilge at the waterline. There was no keel. The entire vessel was caulked, then the casemate was sheathed in 2-inch thick iron sheets, each 13 inches wide and 11 feet long. These were "rabbited" (dovetailed) at the edges to ensure the closest possible fit. The iron continued to the knuckle, which dropped below the waterline when the vessel's guns were mounted. When the vessel was fully armed and equipped, the gunports rode a foot above the waterline. Internal bulkheads below the waterline improved the watertight integrity of the lower hull and provided additional support for the gundeck, which would have to bear the weight of the guns. Inside these compartments were crammed a series of shot lockers, magazines, coal bunkers and shell rooms. On the upper deck the pilothouse (known as the "Texas" to the rivermen) was also lightly armored using boiler plate.

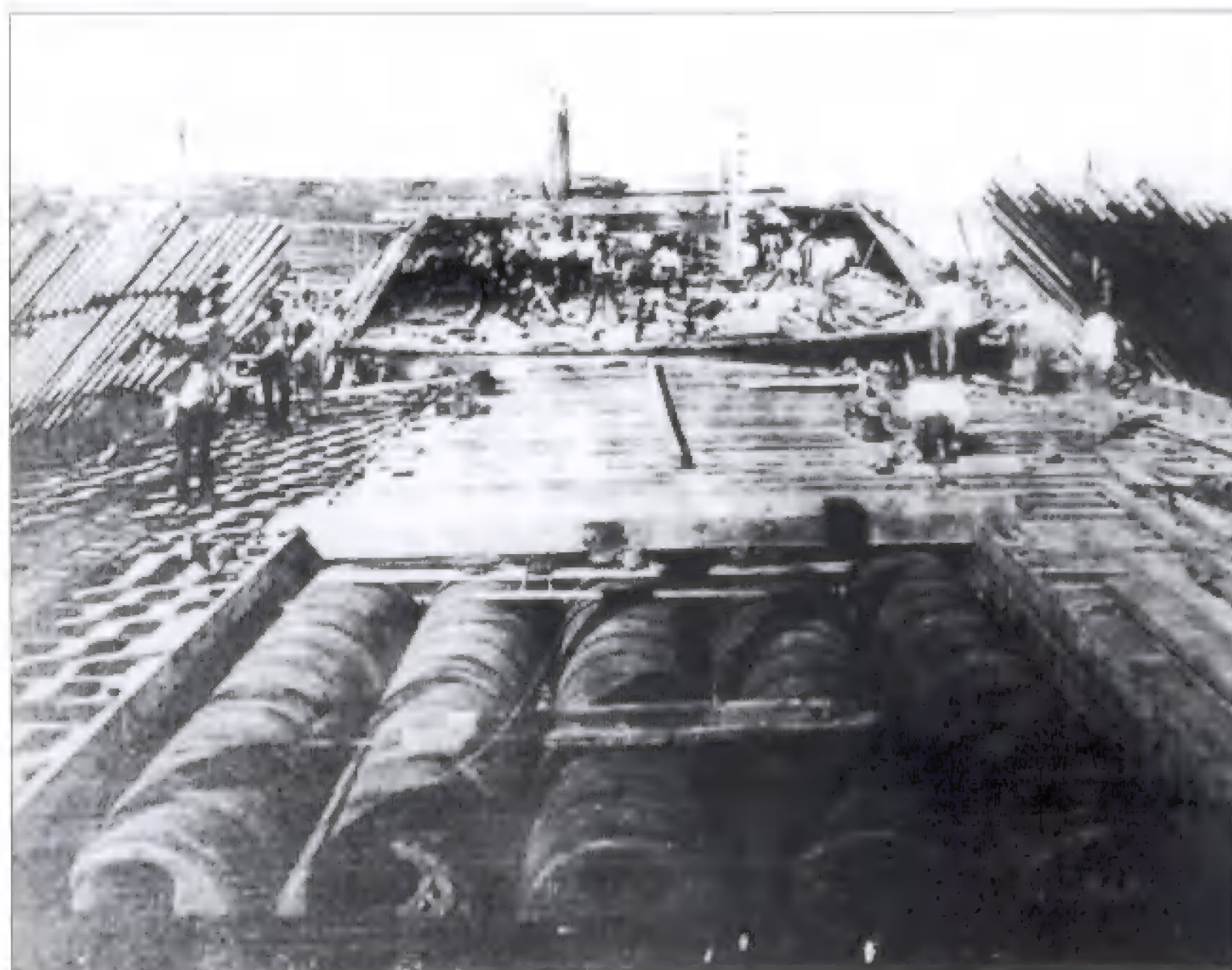
Four of the vessels were to be built at Eads' Carondolet yard outside St. Louis, Missouri, while the remaining three were earmarked for production at Eads' second yard at Mound City, Illinois, some eight miles upstream on the Ohio River. Eads promised the War Department that he would deliver the gunboats by October 10, complete with "engines, boilers and iron plating." He had just over eight weeks to complete Pook's flotilla, and he faced a \$250 per day forfeit per vessel for non-delivery. His set price was \$89,000 per ironclad. Once the hulls, casemates and engines were fitted, Eads would have honored his obligations, and the vessels would be launched, then towed to Cairo, Illinois, for fitting out. Remarkably, even while Eads was busy producing these seven revolutionary warships, he also agreed to convert his company's snagboat into the ironclad *Benton*.

Production was to have been supervised by Commander Rodgers, but rivalry between the naval officer and Frémont led to Rodgers' reassignment. On September 4, Frémont himself was replaced by



An unusual stern view of a City class ironclad. The vessel has been tentatively identified as the USS *Carondolet*. Note the awnings rigged over the spar deck for extra protection from the elements, and the small deckhouse mounted astern of the centerline paddlewheel. (USNHC)

This remarkable photograph shows the construction of two of the four City class ironclads built at St. Louis, Missouri. The two vessels were built bow to bow. The five boilers are seen in the foreground, while the wooden sloping casemate frames are shown rising up on either side. The main gun decks of both vessels are taking shape, while on the further vessel, work has started on the timbers which would eventually support the spar deck. The *Carondolet*, *Louisville*, *Pittsburgh*, and *St. Louis* were all built at the yard. The photograph was probably taken in early October 1861. (USNHC)



Brigadier-General Ulysses S. Grant, and the following day, Captain Andrew H. Foote arrived to assume responsibility for the gunboats and ironclads. As the three operational gunboats were still under Army control, and construction and outfitting of the ironclads was virtually a full-time job, Foote spent his first months on the shore.

Eads hired over 4,000 men in seven Midwest states to cut timber, work metal and to machine parts. The bottom of the *St. Louis* was laid on September 27, and the rest followed within days. The *St. Louis*, *Pittsburgh*, *Carondolet*, and *Louisville* were built at the Carondolet Yard, (sub-contracted by Eads to Hambleton, Collier & Company), while the *Cairo*, *Mound City*, and *Cincinnati* were built in Mound City, by Eads in a yard he leased from the Mound City Marine Railway and Shipyard Company. As the Reverend Boynton noted of Eads' work schedule: "Neither the sanctity of the Sabbath nor the darkness of the night were permitted to interrupt it." Despite this, work progressed slowly, as Eads' already well-paid shipwrights threatened to strike for more money. He had almost spent all of his money, and the War Department had still not presented him with any funds. Problems with the supply of engines, gun carriages, and iron plate all compounded Eads' worries. Despite all these delays, Pook's turtles were ready on or close to the contracted delivery date, and on October 12, 1861 the *St. Louis* and *Carondolet* were launched, followed over the next three weeks by the rest of the flotilla. In the enthusiasm, it seems as if Eads' fines for late delivery were reduced, as he was promptly awarded fresh production contracts.

The seven ironclads were taken to Cairo, where it was found that the worst supplier of all was the US Government itself. Ordnance for the new flotilla consisted of a motley collection of pieces culled from Army and Navy ordnance depots: Modern 8-inch Dahlgren smoothbores and 32-pounder converted rifles from the Navy, and obsolete, poor quality 42-pounder converted rifles from the Army, which many considered

a liability. The standard ordnance allocation was set at three 8-inch Dahlgren smoothbores in the three bow gunports, two 32-pounder converted rifles followed by two 42-pounder converted rifles in each of the two broadsides, then two 32-pounders in the two stern-facing gunports. Almost all the ships had this ordnance fit altered, as listed in the Catalog.

The *Benton* and *Essex*

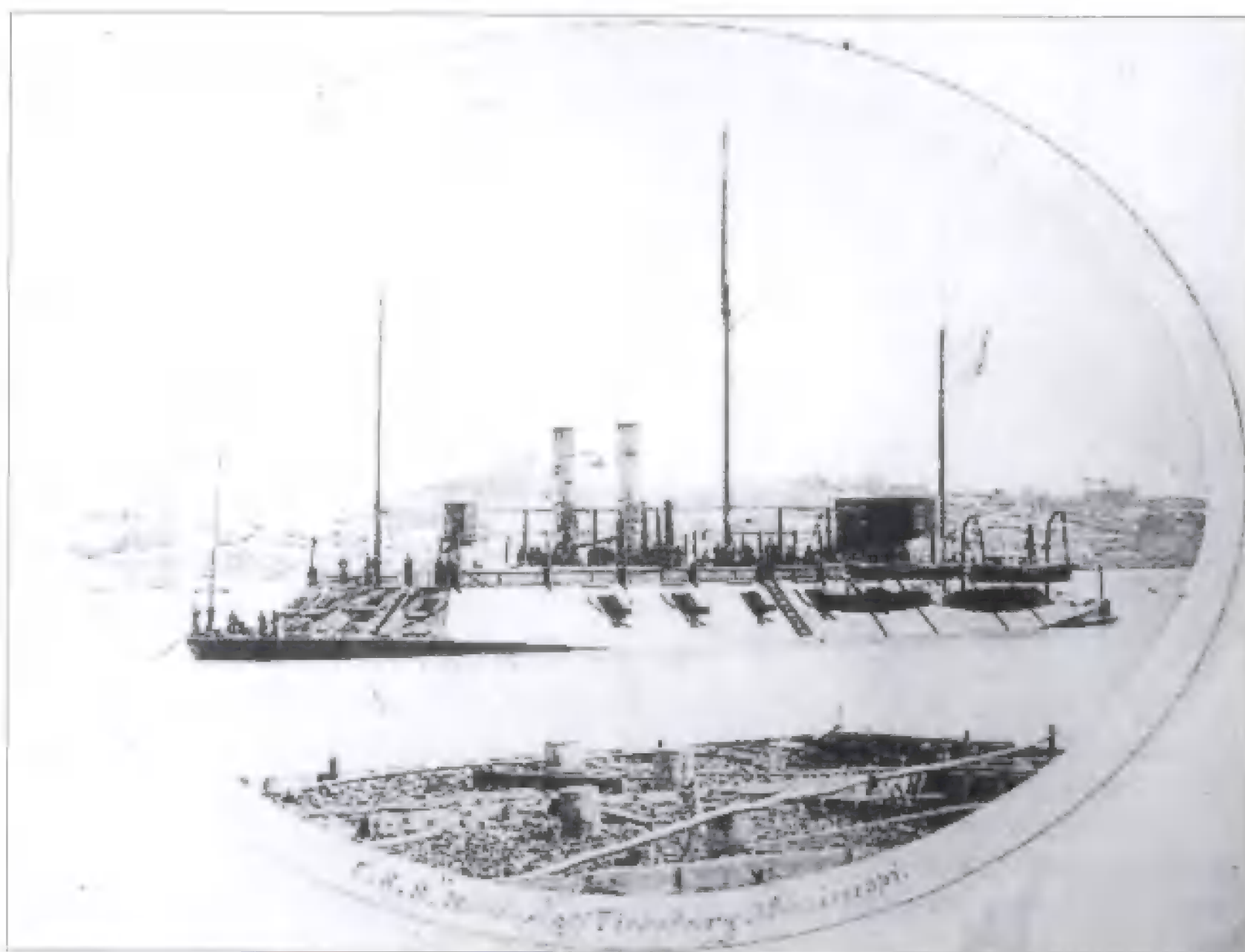
Although the *Benton* and *Essex* superficially resembled the City class of river ironclads, they were unique warships in their own right.

Their design also highlights certain principles by which Pook and Eads produced their concept of the ideal river ironclad.

The *Benton* was a snagboat or salvage boat, originally owned by the US Government, but bought shortly before the war by Eads' company. Eads sold her to the War Department in early November 1861 for \$2,600, and in return, he was awarded the contract to convert her into an ironclad at his Carondelet shipyard, although the day-to-day work was subcontracted to Morse & Daggett of the St. Louis Drydock Company.

Amazingly, the ship was launched a mere month after work began, on December 7, 1861. Clearly Eads had retained most of his skilled workforce hired to build the City class ironclads, and they were simply set to work on the ironclad as the last of the City class was launched. The vessel originally had a catamaran hull, but Eads used the two catamarans as a pair of bracers, around which he stretched the flat 20-foot wide surface of the lower hull and the gundeck. This vessel was also much larger than the earlier ironclads, having an overall length of 202 feet and an incredible 72-foot beam. A bow and stern were added, and the gundeck pierced to house an immense sternwheel casing. Her casemate was well armored, and contained a second tier for accommodation, making her well suited for use as a flagship. Her 2 $\frac{1}{2}$ -inch thick iron plating on the front of her casemate was backed by 2 $\frac{1}{2}$ feet of wood, but this protection was reduced on the sides of the casemate and the stern, where the armor was only $\frac{5}{8}$ in. thick, backed by 20 inches of wood. Just before she was commissioned on February 24, 1862, Commander William D. Porter of the USS *Essex* commented to Eads and Captain Foote that the ironclad was too slow. Eads promptly replied, "Yes, but plenty fast to fight with." Eads was right, and she proved a successful and versatile design.

The *Essex* was another conversion, based around a wooden river ferry called the *New Era* built for the Wiggins Ferry Company of St. Louis, Missouri, by Page & Bacon of New Albany, Indiana, in 1856. The War Department purchased her on September 20, 1861 for conversion into a wooden gunboat, and she entered service a month later as the wooden gunboat USS *New Era*. By mid-December she had been withdrawn from service, and was taken to Eads' yard at Carondelet, where she was converted into an ironclad and renamed USS *Essex* in November 1861. Progress on the conversion was slow due to Eads' lack of funds (and the reluctance of the War Department to pay its bills), but Eads' use of sub-contractors as local financial partners ensured some progress was maintained. Her iron protection was 3 inches thick in places, in two or



The casemate ironclad USS *Benton*, pictured off Vicksburg, Tennessee, after the surrender of the city in July 1863. Photographed from barges moored alongside the city wharves, this waterline view shows the unusual beam of these ironclad vessels. (USNHC)

three layers, but elsewhere it was reduced to a mere 1 inch, backed by a layer of rubber. The iron sheeting supplied by the Theodore Adonis works of St. Louis was barely adequate, as at Fort Henry Confederate shots pierced her casemate and caused serious damage to her boilers. Additional armor was subsequently added, reducing the speed of the vessel but making her a more reliable design in action. Similarly the rubber backing proved virtually useless, and was removed.

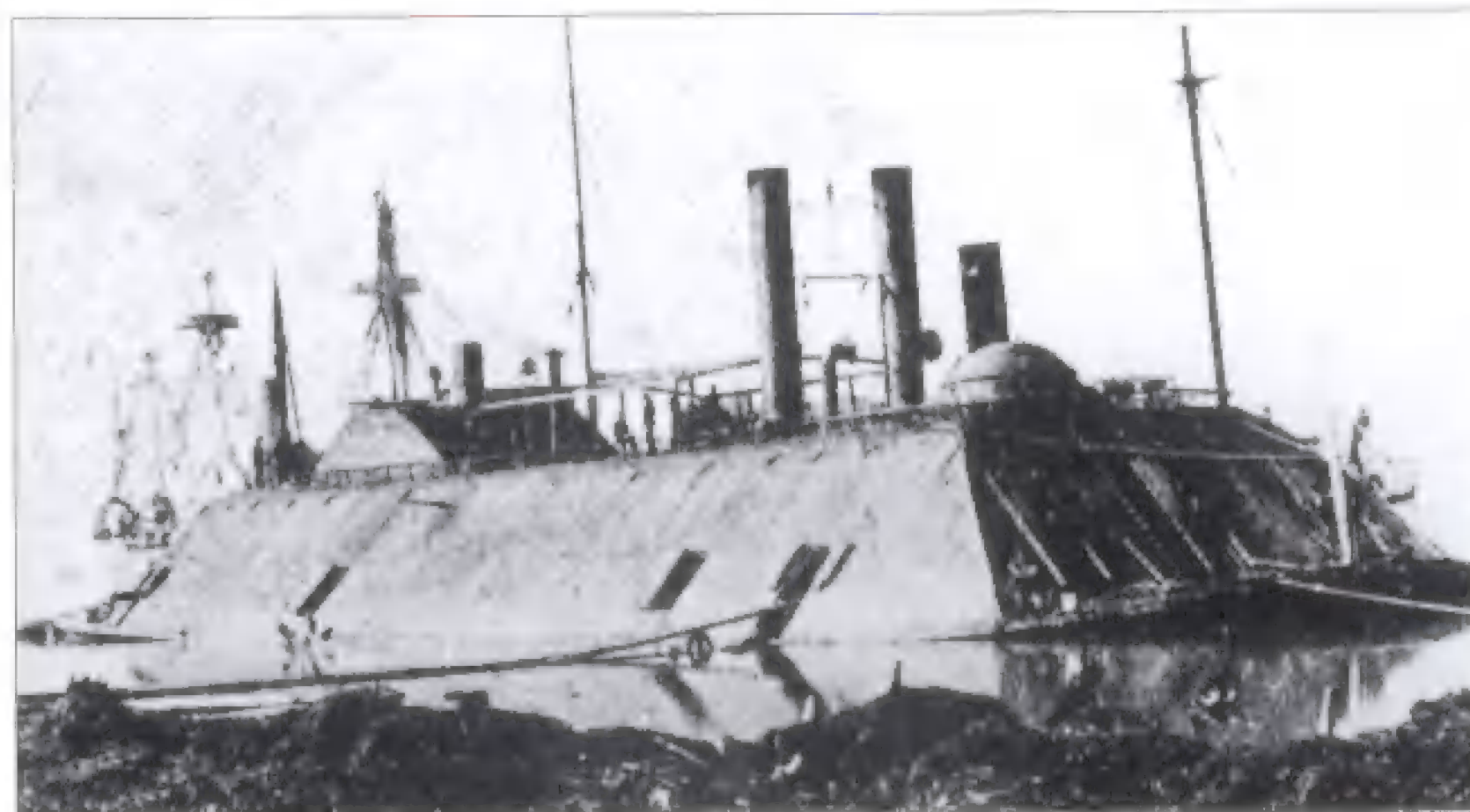
The second generation of Eads' ironclads

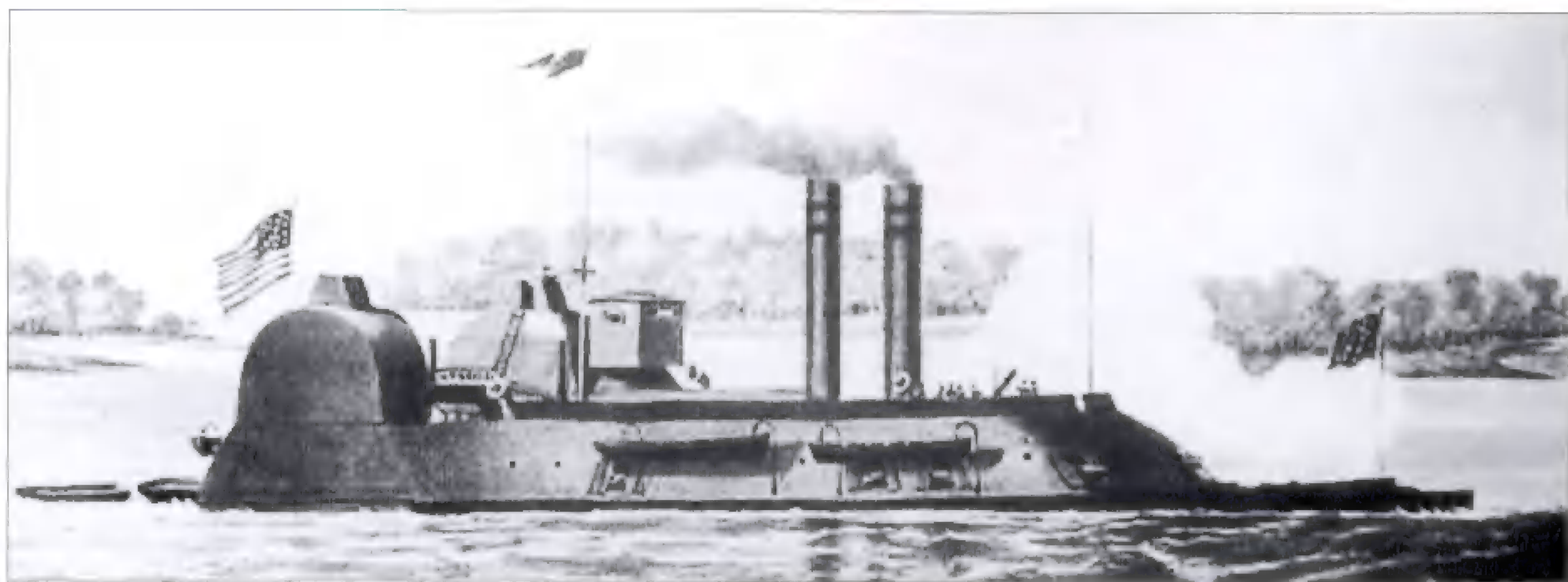
In addition to the nine casemate ironclads described above, James B. Eads was also responsible for building the ironclad casemate rams *Choctaw* and *Lafayette* and the two river monitors of the Neosho class (*Neosho* and *Osage*), as well as three of the four Milwaukee class monitors. These last vessels are described in New Vanguard Series 45: *Union Monitor 1861-65*. This meant that of the 18 ironclads described in this book, Eads built 13 of them. This ensured his yards remained busy throughout the war. What these ships had in common was that they incorporated improvements suggested to Eads and the Navy Department officials by the men who fought in the earlier river ironclads. Although these vessels were not always completely successful, they marked a shift in design that was nothing short of revolutionary. The first batch of river ironclads had essentially been composed of armored versions of the existing river steamers that plied the Mississippi River. These new vessels were like nothing that had been seen before.

Like the *Benton* and *Essex*, the *Choctaw* and her near-sister *Lafayette* were converted from existing civilian riverboats (*Nebraska* and *Aleck Scott*). Originally built in New Albany, Indiana, in 1856, the *Choctaw* followed a design by Captain William D. Porter, the older brother of Admiral David Porter. She was acquired for the War Department in September 1862, and briefly served as the support ship *Nebraska*. The contract for her conversion was given to Eads, who undertook the work at his Carondelet yard. Porter's design called for a large square iron casemate built up on the bow of the *Choctaw*, followed by a low casemate to protect her berth deck, and a thinly armored pilothouse (mounted on a plinth to increase visibility), and two large lightly armored side paddlewheel boxes. The front casemate was designed to house four

large guns firing out of fixed bow (two guns) and side ports (one each side), while additional guns were mounted in her waist beneath her pilothouse, and in a small stern-facing casemate. The design was flawed, as the hull proved too weak to carry the huge weight of armor and guns which Porter had requested. Eads duly introduced his own improvements to the design, including a series of iron

The casemate ironclad USS Essex, photographed at Baton Rouge, Louisiana, in December 1862. One of the most ugly and box-like of the river ironclads, she can be distinguished by her centerline paddlewheel box and her high, angular casemate. (CHC)





reinforcing beams to provide extra support for the casemate, and a better system of internal bulkheads to support the main deck.

The *Lafayette* was another New Albany riverboat which had been purchased by the Army's Quartermaster Department for use as a supply vessel (called the *Fort Henry*). Again, Porter was the chief designer. This time he avoided the huge weight of the bow casemate, and instead opted for a standard casemate (but with a semi-spherical front face), leading to the armored paddlebox design he had built to protect the *Choctaw's* paddlewheels. The design was another failure, and once again, Eads had to adapt the original specifications in order to strengthen the hull, due to the huge weight of armor and guns. These improvements meant that both vessels were underpowered, and poorly armored, and were considered to be less than successful. Both were designed by Porter to act as rams, but neither had the power to function in that role.

The two monitors of the Neosho class were an altogether different story. In the spring of 1862 the Navy Department approached James B. Eads with a request to produce plans for a shallow-draught ironclad, a lighter version of the City class. Following the Battle of Hampton Roads and the spread of "monitor fever" the Navy specified that the new craft must be a monitor, not a casemate ironclad. Eads revised his plans, producing a design for a monitor that drew only 3½ feet of water (but on building them they drew an extra foot), yet was capable of mounting two powerful 11-inch Dahlgrens in a single twin-turret of the Ericsson design (as used on the USS *Monitor*). The contract for two such vessels was signed on May 18, 1862, and work began on them at the Carondelet Yard. Eads' design incorporated a "turtleback" to the hull, gently sloping out from a central spine. A large tapered cylinder protected the stern paddlewheel, while the pilothouse was unarmored to reduce weight. The USS *Neosho* was commissioned in May 1863, and her sister ship the USS *Osage* entered service two months later. These sternwheel monitors proved successful, but unlike the Milwaukee class of monitors built by Eads at Carondelet the following year, they were unsuited for use outside the Western rivers.

"United States Iron Clad Ram 'Lafayette,' Mississippi Squadron." Colored lithograph after an original artwork by William Jefferson, c.1864. The USS *Lafayette* was a singularly unsuccessful design, despite her formidable appearance. Courtesy of the US Navy Art Collection, Washington, DC. (USNHC)

Joseph Brown's second generation ironclads

In the spring of 1862 the War Department commissioned a trio of revolutionary casemate ironclads, based on a series of designs produced by the Naval Constructor Samuel Hartt. The contract for their

production was awarded to James Brown, a river shipyard owner and businessman from Cincinnati, Ohio. Their design incorporated improvements to the City class design of Samuel Pook, based on experience with the first batch of river ironclads, but a lack of coordination between the builder, the naval architect and the War Department led to serious problems with the design of the vessels.

The *Chillicothe* used side paddlewheels mounted on her stern quarters, and a lightly armored superstructure extending forward from the boxes ending in a strong rectangular casemate in her bow. This gun casemate was protected by three inches of iron plate (two inches on the sides), and housed a pair of 11-inch Dahlgren smoothbores. The powerful and reliable engines supplied by the McCord & Junger works of New Albany, Indiana, gave her a maximum speed of 7 knots, but some accounts suggest this was eventually increased by two more knots. Despite this, the vessel had some serious defects. Her structure was not strong enough to support her armored casemate, causing the weight to compress her lower hull. Also, when her guns were fired, the view from the pilothouse was obscured, making her difficult to control in action. She lacked longitudinal strength, and when her hull started to hog (bend), additional iron strapping was added to prevent any further distortion.

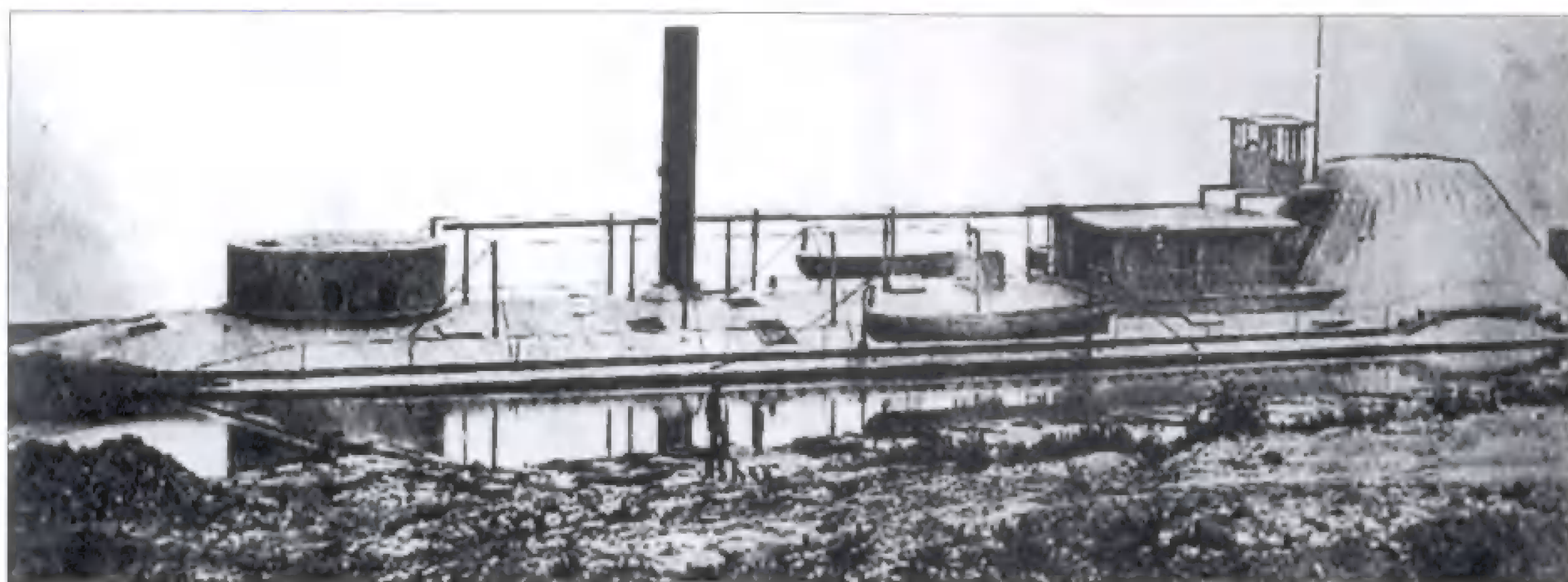
The *Tuscumbia* was a broader version of the *Chillicothe*, and incorporated the same strong powerful casemate and side paddlewheels found on the smaller vessel. She also shared many of the *Chillicothe's* flaws, as the hull was also prone to hogging, and the weight of the casemate and superstructure partially crushed the deck and the lower hull together. Iron knees (bridgetrees) were fitted to keep the deck off the boilers, which were in danger of being crushed when the deck was compressed by over six inches. Similarly hog chains and braces were added to prevent her hull from warping. Her engines powered her two paddlewheels as well as a single screw, and like that of the *Chillicothe*, they proved highly effective, although the lack of protection provided to the paddleboxes proved a weakness in action. Like the other vessel, she was built by Brown, although much of the work was sub-contracted. Both ships were extremely poorly constructed, and this hasty and slipshod building meant that both vessels spent an inordinate amount

of time being refitted, strengthened or repaired. The design was heavily influenced by Joseph Brown's own modifications, but neither Brown nor Hartt proved capable of coping with the design challenges they were faced with. Both vessels were singularly unsuccessful designs.

The next ironclad produced by Joseph Brown was the *Indianola*, a powerful warship which incorporated improvements

A view of the gundeck of the City Class vessel USS *Carondolet*, looking aft. The cabins shown on the left ran along the centerline of the ship, and would be dismantled before a battle. (Author's Collection)





View of the USS Osage, photographed somewhere on the Mississippi or the lower Red River in 1863–64. A unique stern-paddlewheel monitor design, this vessel had an extremely shallow draft, and proved successful. The *Osage* was also the first naval vessel to use a periscope in naval warfare. (USNHC)

over earlier river ironclad designs. She was fitted with the same engines and propulsion system as the *Tuscumbia*, making her reasonably fast and reliable. Her bow casemate contained two 11-inch Dahlgren smoothbores on pivot mounts, capable of firing out of bow or side ports as required. A second smaller stern casemate housed two 9-inch Dahlgren smoothbores. Her design was largely the work of Brown himself, and its success compensated for his other failures. One design flaw was that her screw machinery left almost no room for crew quarters, forcing them to berth off the ship, which consequently reduced her range of operation. Like the other ironclads built by Brown, she was poorly constructed, and if she had remained in service longer she would probably have required extensive refitting.

The Eastport and Ozark

The *Eastport* was an ironclad which was captured from the Confederates while she was still under construction. As her original plans are lost, it is unknown whether her new Union owners simply continued to build using the original Confederate design or whether the design was altered. Her design does bear a passing resemblance to the Confederate casemate ironclads *Baltic* and *Nashville*, so it is most probable that she was completed as first designed. She was completed in New Albany, Indiana, and Cairo, Illinois, during the second half of 1862. She had side paddlewheels, a long lightly armored casemate (probably protected by two inches of plating) and a lightly armored pilothouse on her spar deck. Like many of the river ironclads, it was found that her hull lacked the strength to support the weight of her armor, so she was modified and strengthened in Cairo before she entered service in January 1863.

By contrast the *Ozark* was a purpose-built single-turreted monitor, mounting an Ericsson-designed turret which carried two 11-inch Dahlgren smoothbores. A War Department design, the contract for her construction was awarded to George C. Bestor of Peoria, Illinois, who sub-contracted the building work to Hambleton, Collier & Company of Peoria, Illinois. Her propulsion system was provided by McCord & Junger from their small St. Louis works, but it proved less successful than the machinery produced in the New Albany plant. Consequently the *Ozark* was seriously underpowered, and her expected speed of 9 knots was never attained, and 5–6 knots was all her four engines could achieve.

She carried a secondary armament of four Dahlgren smoothbores which were mounted on exposed positions on her deck, although later in her career a wooden casemate was added to screen them from the elements. She was criticized for her structural flaws, lack of protection, and poor propulsion system, and the *Ozark's* performance during the Red River Campaign of 1864 highlighted her many faults. The most significant of these was her incredibly high coal consumption, and in the middle of 1864 she was withdrawn from active service.

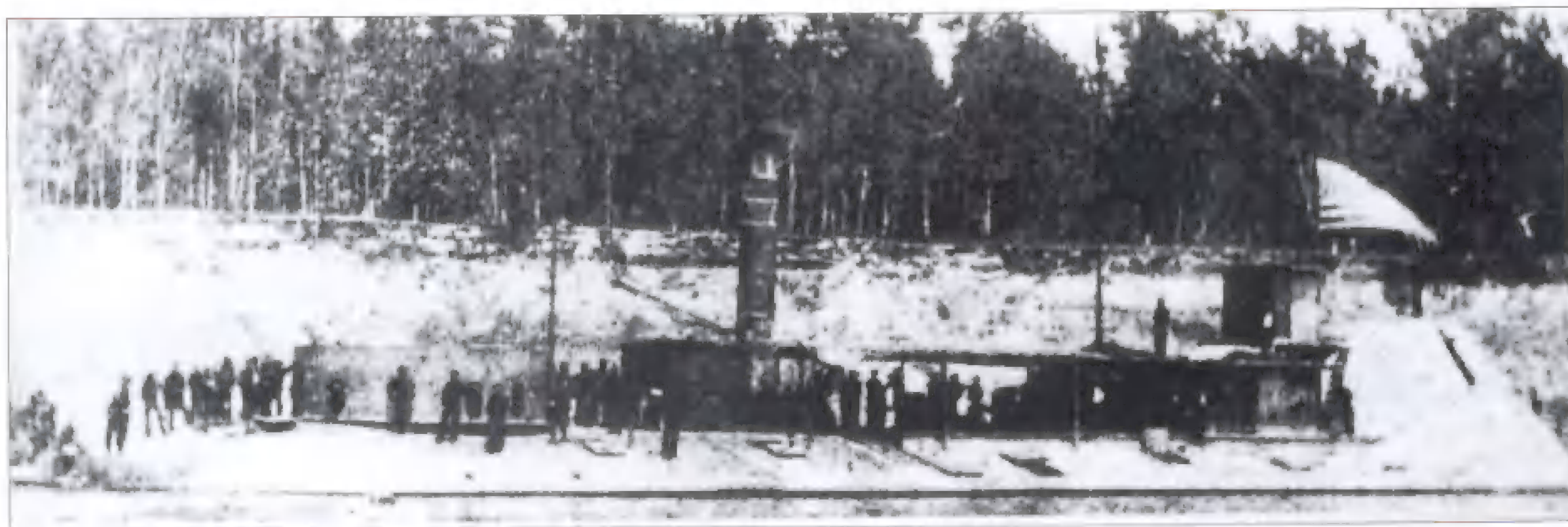
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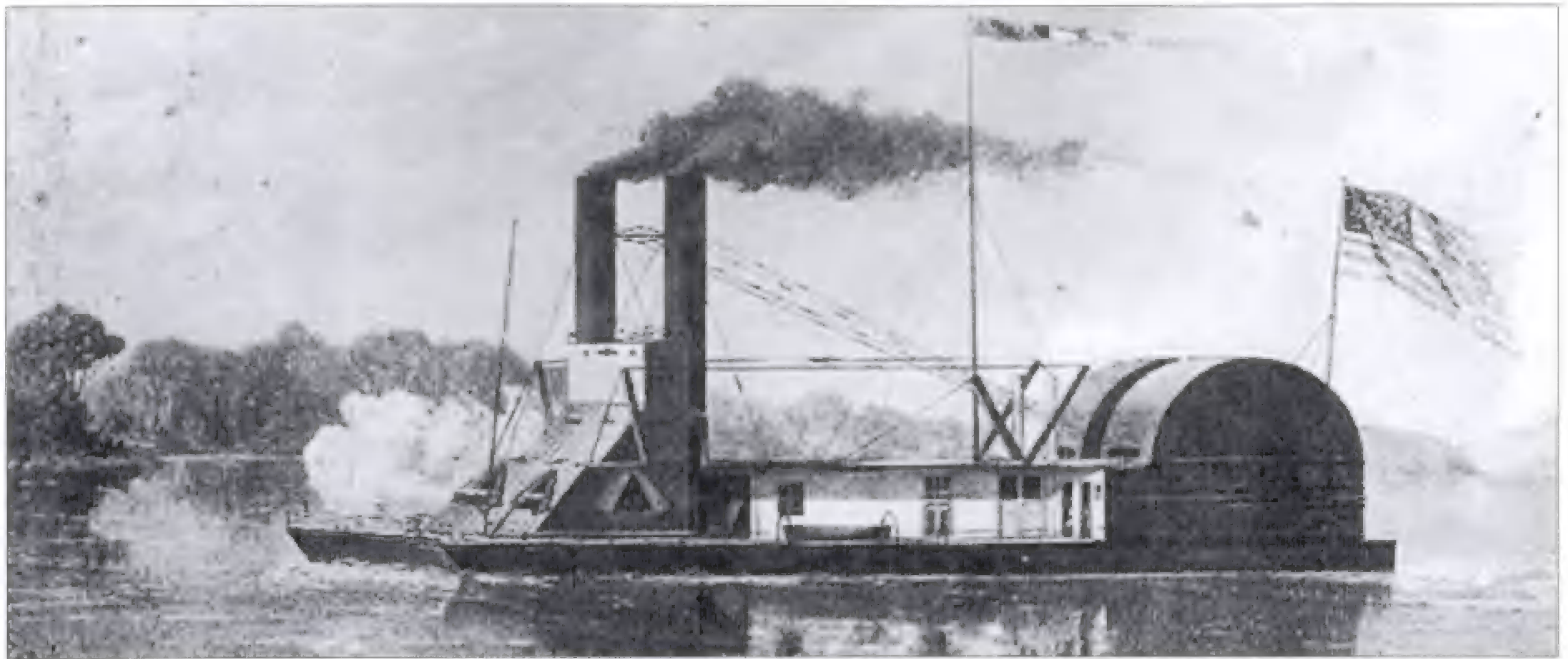
In previous books in this series the composition of the crew, conditions of service, the nature of ordnance, the experience of fighting inside an ironclad and the command structure of the Union fleet have all been examined in detail (see Osprey New Vanguard 45: *Union Monitor 1861-65*; and 49: *Mississippi River Gunboats of the American Civil War 1861-65*). To avoid repetition these subjects are not discussed in this volume, so that more attention can be paid to the ships themselves, and the actions in which they fought.

Role

The Union river ironclads were designed as the strategic tool by which the Union could wrest control of the Mississippi River and its tributaries from the Confederates. Inevitably this meant that the ironclads would be called upon to attack major fortifications, exchange fire with powerful shore batteries, and possibly even fight flotillas of enemy warships, some of which might also be ironclads. With this in mind it was decided that the armored casemate design was versatile enough to allow their operation against both fortifications and other ships. Certain design characteristics also limited their use. Almost all of these river ironclads lacked protection from plunging fire. Consequently when they went into action at Fort Henry, Fort Donelson, or Vicksburg, their commanders were well aware of the vulnerability of their ships, and tried to limit their exposure to this kind of fire. Similarly, for most of the casemate ironclads the most powerful armament was concentrated in the bow, as was the thickest armor plating. This was a design feature suited to the nature of riverine warfare, and so the vessels were fought with this in mind.

The river ironclad USS *Osage* was one of the two monitors of the Neosho class, carrying her guns in a turret mounted on the forward part of her hull. Its field of fire was restricted by the stern paddlewheel and pilothouse structure on her stern. (USNHC)





The work of patrolling the Western rivers was usually left up to the Western Gunboat Flotilla's fleet of wooden or tinclad gunboats and the ironclads tended to be kept in reserve for major actions. They were used in numbers as a form of naval cudgel, battering enemy fortifications into submission or decimating enemy flotillas. To support them, a naval base was established on the Ohio River at Cairo, Illinois, and the shipyards at Mound City, Carondelet (St. Louis), New Albany, and Cincinnati all provided facilities for the repair and maintenance of the ironclad fleet. The result was a powerful force which had the right ships, men, guns, and support to fulfil its strategic mission.

The strangely shaped USS *Chillicothe*, in an engraving published in *Bufford's Magazine* in 1864. She was a smaller version of the USS *Tuscumbia*, and shared the same defects of design and poor construction. The wire stays prevented the hull from warping ("hogging"). (USNHC)

Ironclads in action

The Union river ironclads of the Western Gunboat Flotilla fought several crucial engagements during the Mississippi Campaign, and took part in numerous smaller actions. Although the general details of the larger of these encounters are widely known, it is worthwhile briefly re-examining them in order to understand better how these warships were fought and handled in action. Tactics had to be learned as the war progressed, and new hazards such as torpedoes (mines) and enemy ironclads provided challenges which taxed even the most experienced Union commanders. Essentially, Flag-Officer Foote demonstrated that the river ironclads could be used to engage enemy fortifications, but they were vulnerable in the wrong circumstances. Similar lessons would be learned during encounters with Confederate rams and ironclads, mines, and shore batteries as the river ironclads fought their way south towards Vicksburg. The actions outlined below have been chosen to demonstrate the range of engagements the river ironclads fought in, and the lessons learned from their experience.

Fort Henry and Fort Donelson (February 1862)

The river ironclads were crucial to General Grant's plans to capture these key Confederate fortifications which guarded the Tennessee and Cumberland Rivers. Coordination of the Union naval and land elements was simplified as both ships and troops were under army control. First, Grant attacked Fort Henry on the Tennessee River (February 6), and

Flag-Officer Foote's four ironclads, *Cincinnati* (flagship), *St. Louis*, *Carondolet*, and *Essex*, opened the attack by bombarding the fort. Three days before during a reconnaissance the *Essex* had been lightly damaged by a Confederate shot which had penetrated the spar deck and destroyed part of the captain's stateroom. In this second attack Foote's vessels formed a line abreast, and bombarded the fort at medium range, their well-protected bows facing upstream, their 8-inch smoothbore bow guns pointing at the fort. Foote had already lectured his men about wasting shots: "Every charge you fire from one of these guns costs the government about eight dollars." Most of the shots hit their target, and when the range was reduced to less than 300 yards, the shot from the 8-inch guns ripped through the fort's earthen defenses. Fort Henry surrendered before Grant could bring up his infantrymen to attack it. The flotilla received 59 hits, but only the *Essex* was put out of action, when a bolt (armor-piercing shot) pierced the casemate and blew up a boiler, filling the ironclad with scalding steam. Two men in the pilothouse were killed, and 29 crewmen were badly burned.

On February 13 the *Carondolet* provided supporting fire as Grant's men invested Fort Donelson, and the following day Foote led the *St. Louis* (flagship), *Pittsburgh*, *Louisville*, and *Carondolet* into action, using the same line abreast deployment first seen at Fort Henry. Foote's concern for waste was reflected when he shouted to Commander Walke of the *Carondolet* that he should reduce his rate of fire, to improve accuracy. This time the Confederates were better prepared, and when Foote ordered his ships to close within 400 yards of the fort, his ships were exposed to plunging fire. The flagship was hit 59 times, one shot hitting her pilothouse and wounding Foote. Both the *St. Louis* and the *Louisville* had their steering gear shot away and drifted from the fight, and the *Carondolet* was hit so many times she was near to sinking. All four vessels were forced to retreat, with nothing to show for the casualty list of 54 men. Two days later Fort Donelson surrendered to General Grant. In future engagements where plunging fire was expected (for example at Vicksburg), commanders would stack extra timber or iron on their spar decks to improve protection.

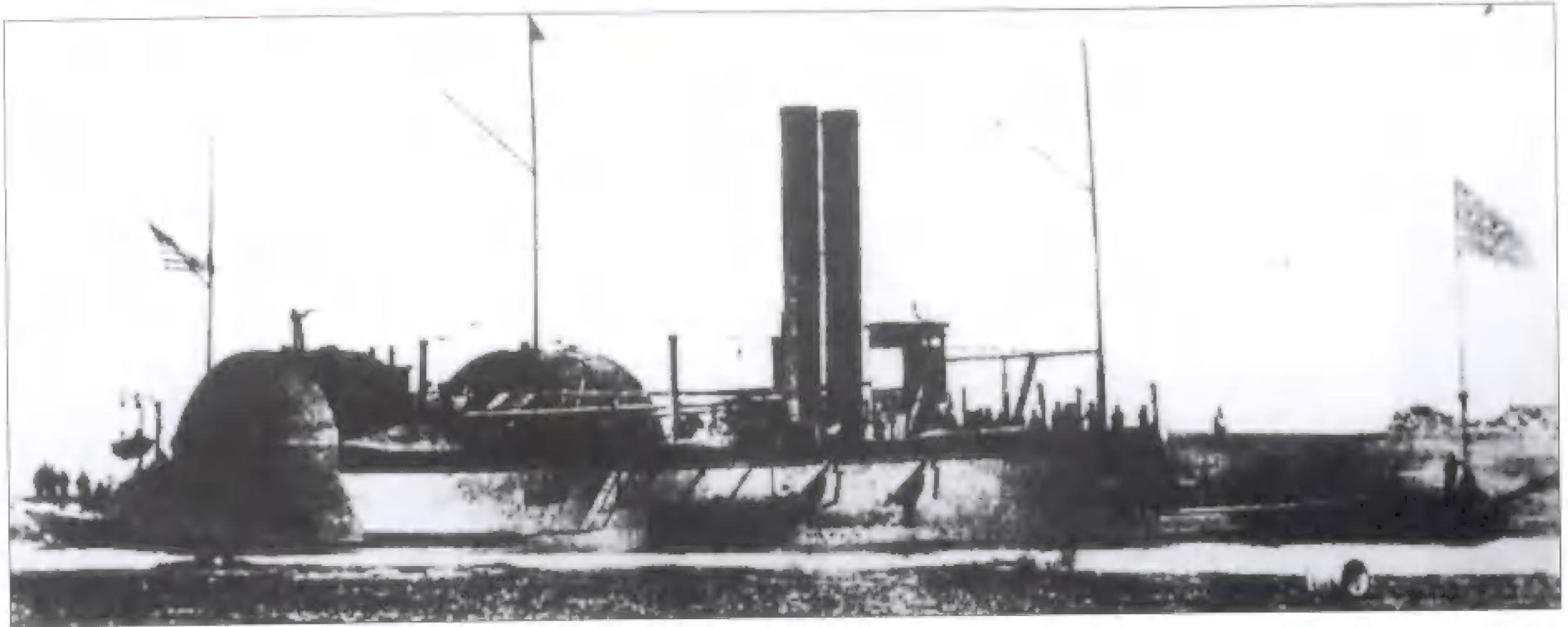
Island No. 10 (March–April 1862)

Foote approached the assault on Island No. 10 with caution after his defeat at Fort Donelson. In his attack on the strong Confederate position

he used the *Benton*, *Carondolet*, *Pittsburgh*, *Cincinnati*, *Louisville*, *Mound City*, and *St. Louis* to bombard the enemy at long range, avoiding any risk from plunging fire. The ironclads were supported by mortar boats, whose shells pummeled the Confederates for several weeks. On April 6, when he judged the defenses were suitably weakened, Foote sent Commander Walke's *Carondolet* in a daring night-time run past Island No. 10, followed by the *Pittsburgh* two days later. Both ships made the run with their gunports closed, as returning the fire of the shore batteries would only give the Confederates a better target. The two ironclads effectively cut off the

"Admiral Porter's Fleet Running the Rebel Blockade of the Mississippi at Vicksburg, April 16th, 1863." Colored lithograph published by Currier & Ives, New York, 1863. The ironclads depicted are (from front to rear), the *Benton*, *Lafayette*, *Louisville*, *Mound City*, *Pittsburgh*, *Carondolet*, and *Tuscumbia*. (USNHC)





Confederates from reinforcement, and when they covered the crossing of General Pope's Union troops, the defenders surrendered. Walke proved that, if well handled, the City class ironclads were reasonably invulnerable to flat trajectory fire, and faith in the ironclads was partially restored.

Fort Pillow (Plum Point Bend) and the Battle of Memphis (May and June 1862)

Foote was still suffering from his wounds, so he was replaced by Flag-Officer Charles H. Davis. The new commander led the *Benton* (flagship), *Carondolet*, *Cairo*, *Cincinnati*, *Mound City*, *Pittsburgh*, and *St. Louis* in a daily bombardment of Fort Pillow, supported by mortar boats. On May 10 the fleet was surprised by the eight wooden rams of the Confederate River Defense Fleet, commanded by Captain James E. Montgomery. The light Confederate ships rammed and sank the *Cincinnati* and *Mound City* before they were driven off by Union fire. In the first purely naval action of the campaign, the lumbering ironclads had proved vulnerable to surprise attack, but their firepower had inflicted heavy casualties among the Confederate crews. Both ironclads were refloated and returned to service.

The opportunity for revenge came the following month when Davis led the *Benton* (flagship), *Carondolet*, *St. Louis*, *Cairo*, and *Louisville* downriver to Memphis, on June 6th, supported by four of Colonel Charles Ellet's wooden rams. The ironclads entered the battle stern first, to improve ship handling during the run downstream, and as they turned to attack the Confederate ram fleet, the Union rams surged past and initiated a whirling *melée*. The Confederates were decimated before the ironclads could effectively join in the action.

The White River Expedition (June 1862)

In mid-June 1862, two ironclads (*Mound City* and *St. Louis*) supported by two wooden gunboats were detached from the main fleet and sent on a sweep up the White River, in Arkansas. The expedition was led by Commander Augustus H. Kilty, the captain of the *Mound City*. During an attack on Fort Hindman near St Charles, Kilty arrayed his two ironclads in line abreast, relying on his 8-inch smoothbores to reduce the fort. Encouraged by the lack of effective return fire, Kilty ordered the vessels to close within 100 yards of the fort. At this range, neither side could

The former Confederate ironclad *Eastport* was captured before she could see service, and was duly converted, then christened the *USS Eastport*. She served against her former owners on the Red River before being destroyed to prevent her capture in April 1864. She carried two 100-pounder rifles in her bow, and the remainder of her guns were split between her two broadsides. (CHC)



The USS *Ozark* was part monitor, part casemate ironclad, as she carried two 11-inch smoothbores in her turret, and four more guns in an unarmored casemate behind it. The ship was an abject failure, and was withdrawn from active service after only four months. (USNHC)

miss, and a 64-pounder solid shot hit the *Mound City*'s forward casemate on the port side, tearing through the iron and wood to smash into the steam drums (boilers). The resulting explosion filled the casemate with high-pressure steam, causing 125 fatalities and wounding 25 others, including Kilty. Only 37 of the crew escaped injury (she was undermanned at the time, as her full paper complement was 251 men). The *St. Louis* backed off, but kept up the fire until the fort was stormed by Union troops. The action demonstrated the vulnerability of the City class design to close-range fire, and consequently the new generation of river ironclads would be better protected, and have their engines separated from their casemates.

The Yazoo River and Vicksburg (July–August 1862)

The brownwater fleet of Davis joined forces with the ocean-going fleet of Farragut above Vicksburg on June 28, and as the two commanders decided what to do next, they heard rumors of a Confederate ironclad which was being built on the Yazoo River. Davis sent the *Carondolet* (captained by Commander Walke) and two wooden gunboats to investigate. On July 15 the flotilla encountered the ironclad ram CSS *Arkansas* coming downriver and a running fight ensued, as the gunboats ran for the cover of the *Carondolet*. The two ironclads exchanged fire at point-blank range, the *Arkansas* raking her adversary before trying to ram her. *Carondolet*'s shots had been unable to penetrate the Confederate ironclad's armor, but Confederate fire had destroyed gunports, penetrated the *Carondolet*'s casemate, and smashed into her engines. Badly damaged and leaking steam, the *Carondolet* was steered towards the bank. The *Arkansas* returned to the main channel and continued on downstream, leaving Walke to contemplate the poor performance of his vessel. An hour later the *Arkansas* ran past the anchored Union fleet, firing at the flagships of Davis and Farragut as she steamed past, to reach the safety of Vicksburg. Once again, the fire of the Union river ironclads caused minimal damage to the Confederate ironclad. A chance for revenge came on the night of July 22, when the ram fleet followed by the *Benton* (Davis' flagship), *Essex*, *Louisville*, and *Cincinnati* steamed downstream to attack the *Arkansas* as she lay moored alongside the wharf at Vicksburg. All the ironclads had their spar decks protected by a layer of cotton bales. Although the Confederate ironclad was unharmed, the *Essex* ran aground as she tried to ram the *Arkansas*. Badly damaged, the *Essex* managed to claw her way off and drifted downstream. Once again, the river ironclads proved no match for well-manned shore batteries.

The Siege of Vicksburg (April-July 1863)

All Union attempts to capture the Confederate city of Vicksburg had failed. Then, in April 1863, General Grant devised a plan to move south of Vicksburg, cut the city off from its supply lines, then move in to surround the stronghold. To support his army he also needed to move the Western Gunboat Flotilla south, which meant it had to run past the city's guns. The flotilla was now under the control of the Navy, and its new commander Rear-Admiral David D. Porter prepared his ships for the coming battle. Cotton, timber, and iron were lashed to the spar decks of the ironclads to improve their protection from plunging fire. On the night of April 16, Porter led his ships round the Vicksburg bend. The flagship *Benton* took the lead, with the tug *Ivy* lashed alongside it. Behind her the *Lafayette* was lashed to the *General Price*, and the *Louisville*, *Mound City*, *Pittsburgh*, and *Carondolet* followed in line astern. Three army transports and the *Tuscumbia* brought up the rear. The flotilla remained about 800 yards from the shore, and as Confederate calcium lights and fires lit the river, both sides opened fire. All the ironclads were hit, but they all managed to run past the batteries without serious damage, although the *Lafayette* went aground when her wheelhouse was hit, and had to be towed to safety. The flagship *Benton* was hit five times, including by one 10-inch shot which split her casemate, but no crew were killed on any of the ships.

Almost two weeks later, on April 29, the ironclads were in action again, bombarding the Confederate defenses at Grand Gulf, Mississippi. The four City class iron-clads quickly silenced the city's lower (downriver) gun batteries, then they joined the *Benton*, *Lafayette*, and *Tuscumbia* which were having a harder time with the fortifications upriver. In the six-hour engagement Porter's fleet fired over 1,000 rounds, which partially silenced the Confederate batteries. In return a shot pierced the *Benton*'s casemate, causing 25 casualties, and the *Tuscumbia* was damaged. Porter afterwards described the *Tuscumbia* as "a poor ship in a hot engagement." One problem was the 5-knot river current, which made it difficult for the ships to maintain station. In particular the underpowered *Tuscumbia* and the damaged *Benton* were both swept away by the current during the battle. Vicksburg finally fell on July 4, but the campaign had proved a costly one for the river fleet. During operations around Vicksburg or on the nearby tributaries of the Mississippi, the Western Gunboat Flotilla had lost

"Between decks - Serving the guns." This sketch showing the crew of an 8-inch Dahlgren smoothbore gun in the bow battery of the USS *Carondolet*. The engraving was based on an original sketch by Rear-Admiral Henry Walke.





Flag-Officer Foote in the pilothouse of the USS *Carondolet* during the attack on Fort Henry, February 6, 1862. The ironclad was hit over 30 times during the engagement, but no serious damage or casualties were inflicted by the Confederate gunners. (Author's collection)

the *Cairo*, *Cincinnati*, *Indianola*, and *Baron de Kalb* (formerly the *St. Louis*), although the *Cincinnati* was subsequently raised and repaired.

The Red River Campaign (March-May 1864)

After Vicksburg, the River Fleet was dispersed to patrol the length of the Mississippi and its tributaries, but in March 1864 it was gathered together for a major joint-service offensive up the Red River towards Shreveport. The *Benton*, *Essex*, *Carondolet*, *Louisville*, *Mound City*, *Pittsburgh*, *Eastport*, *Chillicothe*, *Lafayette*, *Choctaw*, *Neosho*, *Osage*, and *Ozark* all participated in the campaign, only to find themselves stranded by the falling levels of the river. To compound the problem, the Union army commanded by General Banks was defeated and began to retreat, threatening to leave the ironclad fleet isolated. Thanks to a brilliant feat of engineering two dams were constructed to raise the water levels, and the fleet

managed to escape to safety. The only casualty was the *Eastport*, which struck a torpedo, and had to be destroyed to prevent her capture. Unsupported, the ironclads proved vulnerable to surprise attacks from the shore, and in future operations, the close co-operation of the army was assured before the ironclads were risked in action.

Nashville (December 1864)

As General Hood's Confederate army advanced north from Atlanta towards Nashville, Tennessee, the *Carondolet* and the *Neosho*, accompanied by a squadron of wooden gunboats, were ordered up the Cumberland River to Nashville to support the city's garrison. On December 3, the *Carondolet* shelled a Confederate shore battery at Clarksville, and the following day it recaptured three Union transports that had been taken by the Confederates. On December 6 the *Carondolet* and *Neosho* engaged Confederate batteries at Bell's Mill. In this engagement the *Neosho* was hit over one hundred times without sustaining any serious damage, demonstrating the effectiveness of her design and construction. When General Thomas' Union army turned Hood's flank on December 15, the ironclads provided supporting fire against the Confederate right wing. This rare example of naval gunfire support proved highly effective, and helped defeat the last Confederate field army in the Western Theater.

Mobile (April-May 1865)

During the closing days of the war a joint land and water assault was launched against the Confederate defenses around Mobile, Alabama. Three Confederate iron-clads were known to be in the area, so the attack included the ironclads *Cincinnati* and *Osage*, supported by the four river monitors of the Milwaukee class. The flotilla bombarded Confederate defenses at Spanish Fort and Fort Blakely, guarding the estuary of the Mobile River, and played a major part in the reduction of the two strongholds. During the drive up the Blakely River (a

branch of the Mobile estuary, which was also known as the Spanish River in contemporary accounts) the monitors *Osage* and *Milwaukee* fell prey to Confederate torpedoes on March 29 and March 18 respectively. Although the Confederate ironclads *Huntsville* and *Tuscaloosa* were sacrificed as blockships, the Union fleet was able to push past them up the Blakely River to deliver close range fire on Fort Blakely. It surrendered on April 8, and Mobile fell four days later. The *Cincinnati* pushed on upstream to the Tombigbee River in pursuit of the CSS *Nashville*, while two monitors cleared the Alabama River. Finally on May 10, the crew of the *Nashville* surrendered, a month after Lee capitulated at Appomatox Courthouse.



Union City class ironclads during the attack on Fort Donelson on February 14, 1862. From left to right they are the *Carondolet*, *Pittsburgh*, *St. Louis* (Flag-Officer Foote's flagship), and the *Louisville*. Engraving after a sketch made by Rear-Admiral Henry Walke. (Author's collection)

A CATALOG OF UNION RIVER IRONCLADS

Note: Vessels are listed by the month in which they entered service. Where more than one was commissioned in the same month, they are listed in alphabetical order. Also, much of the information listed in contemporary sources is contradictory, so other historians may well probably produce different data, depending on their sources. Bearing this in mind, the information given below is probably the most accurate listing of these vessels available to date. Also, as there were only 19 active Union River ironclads, it has been possible to provide more information in this catalog than in previous ship lists.

During the attack on Fort Donelson on the Cumberland River (February 14, 1862), one of the 32-pounder rifled guns on the port side of the USS *Carondolet*'s casement burst, wounding a dozen men on the gundeck. This accident demonstrated the lack of reliability of these old smoothbore guns which had been rifled, and encouraged the adoption of more reliable purpose-built Parrott rifles. (CHC)



USS ESSEX

Class:	Essex class (1 in class)
Type:	River casemate ironclad
Origin:	Converted at the Page & Bacon Yard, New Albany, Indiana. Formerly a river ferry boat known as <i>New Era</i> , and first converted as a "timberclad" gunboat. Converted from a timberclad to an ironclad warship, then re-named <i>Essex</i> in December 1861.
Bought into service:	September 1861
Commissioned:	October 15, 1861 as <i>New Era</i> , and subsequently re-named
Length:	198½ ft
Beam:	47½ ft
Draught:	6½ ft
Displacement:	355 tons
Crew:	134 men
Propulsion:	Center paddlewheel, two horizontal engines.
Speed:	5½ knots
Armor:	3 in. casemate, 1½ in. pilothouse
Identified by:	letters "S R X"
Armament:	two 9-inch smoothbores, seven 42-pounder rifles, seven 32-pounder rifles. By August 1862 three of her 42-pounders had been removed, and were replaced by an extra 32-pounder and two 50-pounder rifles. A 12-pounder howitzer was also carried as a deck gun. In January 1863 two of her 32-pounders were replaced by an additional pair of 9-inch smoothbores. By the end of the year, two 32-pounders and four 42-pounders had been removed, and were replaced by two 100-pounder rifles and another four 9-inch smoothbores, making her one of the most powerful vessels on the Mississippi.
Operational history:	Operations on Cumberland River (November 1861). Badly damaged during assault on Fort Henry, Tennessee (February 1862). Repaired. Engagement with the CSS <i>Arkansas</i> at Vicksburg, Tennessee (July 22, 1862), and at Baton Rouge, Louisiana (August 5, 1862). Attacks on Port Hudson (December 1862, and May 1863). Participated in the Red River Expedition (March–May, 1864).
Commanders:	Commander William D. Porter ("Wild Bill"), not to be confused with Flag-Officer (later Rear-Admiral) David D. Porter, who was his brother (December 1861–September 1862), Commander Charles H.B. Caswell (September 1862–July 1863), Commander Robert B. Townsend (August 1863–September 1864), Commander Andrew Bryson (October 1864–end of war).

"Bombardment and Capture of Island Number Ten on the Mississippi River, April 7, 1862."
A colored lithograph published by Currier & Ives of New York, c.1862. It shows the ironclad flotilla bombarding the Confederate defenses of the island, supported by mortar boats. The ironclads shown are (from left to right), *Mound City*, *Louisville*, *Pittsburgh*, *Carondelet*, *Benton* (flagship), *Cincinnati*, *St. Louis*, and the timberclad gunboat *Conestoga*. (USNHC)



USS CAIRO

Class:	City class [aka "Cairo class"] (7 in class)
Type:	River casemate ironclad
Built:	James B. Eads Yard, Mound City, Illinois
Launched:	October 1861
Commissioned:	January 25, 1862
Length:	175ft
Beam:	51ft
Draught:	6ft
Displacement:	512 tons
Crew:	251 men
Propulsion:	Centerline paddlewheel, two horizontal engines
Speed:	9 knots
Armor:	2½in. casemate, 1¼in. pilothouse
Identified by:	light gray stripe on stacks
Armament:	three 8-inch smoothbores, six 42-pounder rifles, six 32-pounder rifles, one 12-pounder rifle (deck gun). By November 1862 three of the 42-pounders had been removed due to faults, and one 30-pounder rifle put in their place.
Operational history:	Assault on Fort Pillow, Tennessee (February–May 1862), Battle of Memphis (June 1862). Operations on Yazoo River (November–December 1862). Sunk by a torpedo on the Yazoo River, December 12, 1862.
Commanders:	Commander Nathaniel C. Bryant (January–August 1862), Lieutenant-Commander Thomas O. Selfridge, Jr. (August–December 1862).

USS CARONDOLET

Class:	City class [aka "Cairo class"] (7 in class)
Type:	River casemate ironclad
Built:	James B. Eads Yard, St. Louis, Missouri
Launched:	October 1861
Commissioned:	January 15, 1862
Length:	175ft
Beam:	51ft
Draught:	6ft
Displacement:	512 tons
Crew:	251 men
Propulsion:	Centerline paddlewheel, two horizontal engines
Speed:	7 knots
Armor:	2½in. casemate, 1¼in. pilothouse
Identified by:	red band on stacks
Armament:	four 8-inch smoothbores, one 42-pounder rifle, six 32-pounder rifles, one 50-pounder rifle, one 30-pounder rifle, one 12-pounder rifle (deck gun). In May 1863 five of the 32-pounders were removed and three 9-inch smoothbores were put in their place. By January 1864 two 100-pounder rifles had replaced the remaining 32-pounder and the one 42-pounder.
Operational history:	Assault on Fort Henry and Fort Donelson, Tennessee (February 1862). Assault on Island No. 10 (March–April 1862). Assault on Fort Pillow, Tennessee (April–May 1862). Battle of Memphis (June 1862). Operations on the White River (June 1862). Engagement with CSS <i>Arkansas</i> on Yazoo River (July 1862). Operations on Yazoo River (November–December 1862). Operations at Vicksburg, Tennessee (April–May 1863). Assault on Grand Gulf, Mississippi (April 1863). Participated in the Red River Expedition (March–May, 1864). Operations on Cumberland River (December 1864).

A: USS Essex



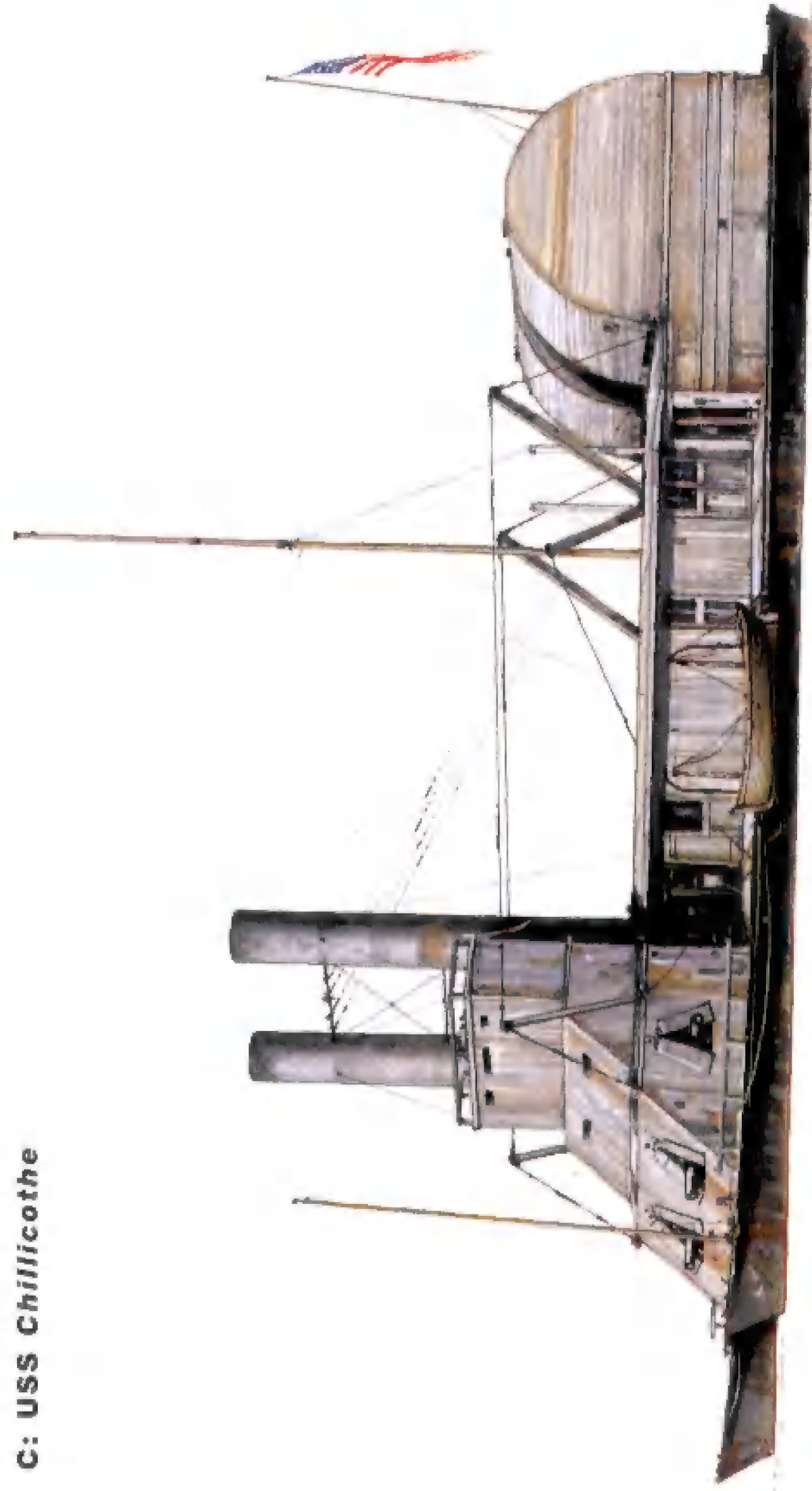
USS Benton



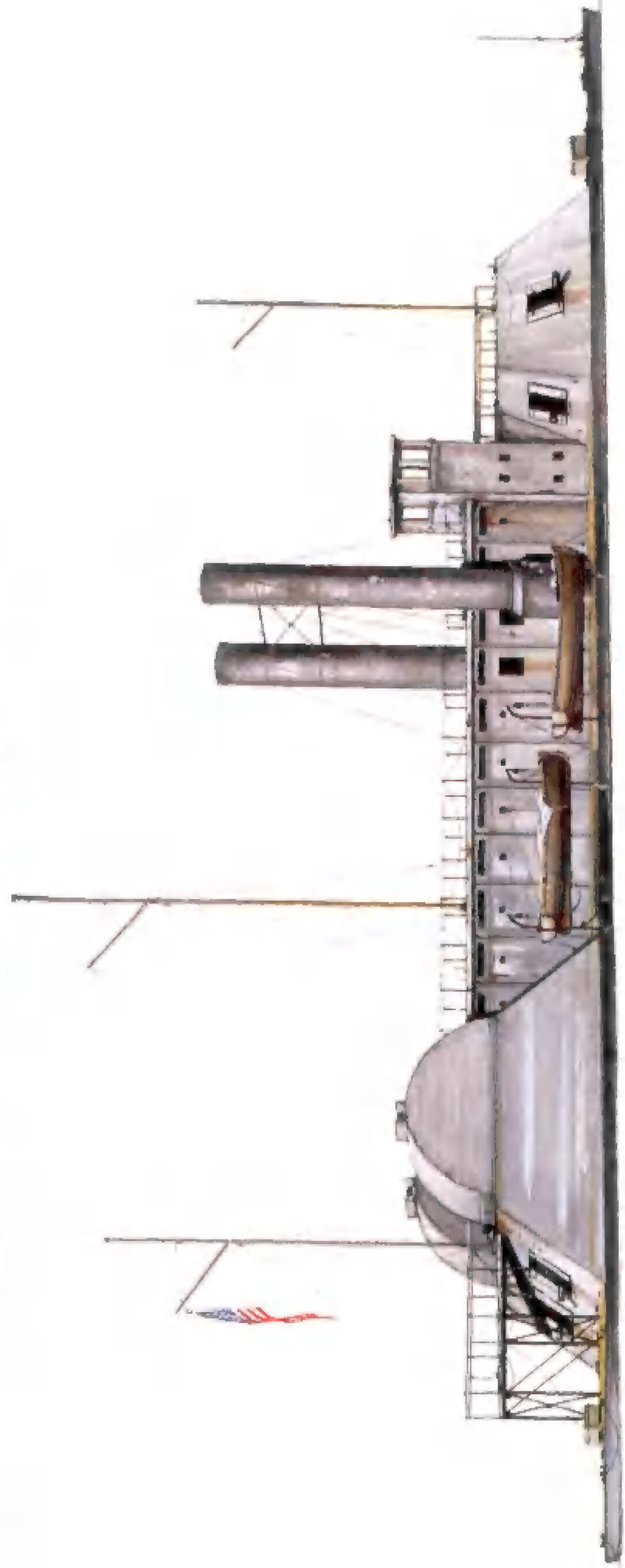


B: The Passage of Vicksburg, April 1863

C: USS Chillicothe



USS Indianola

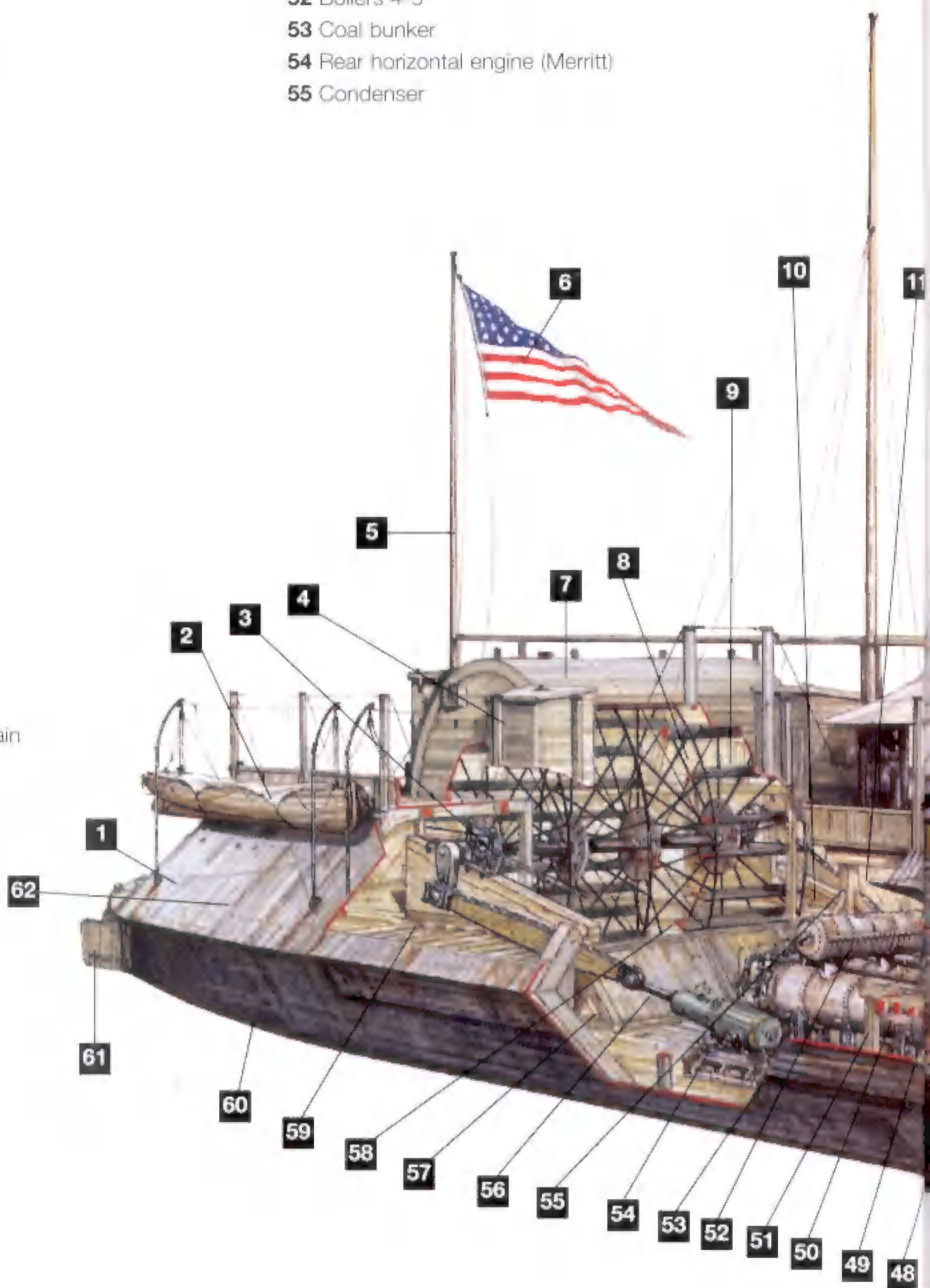


D: USS CAIRO

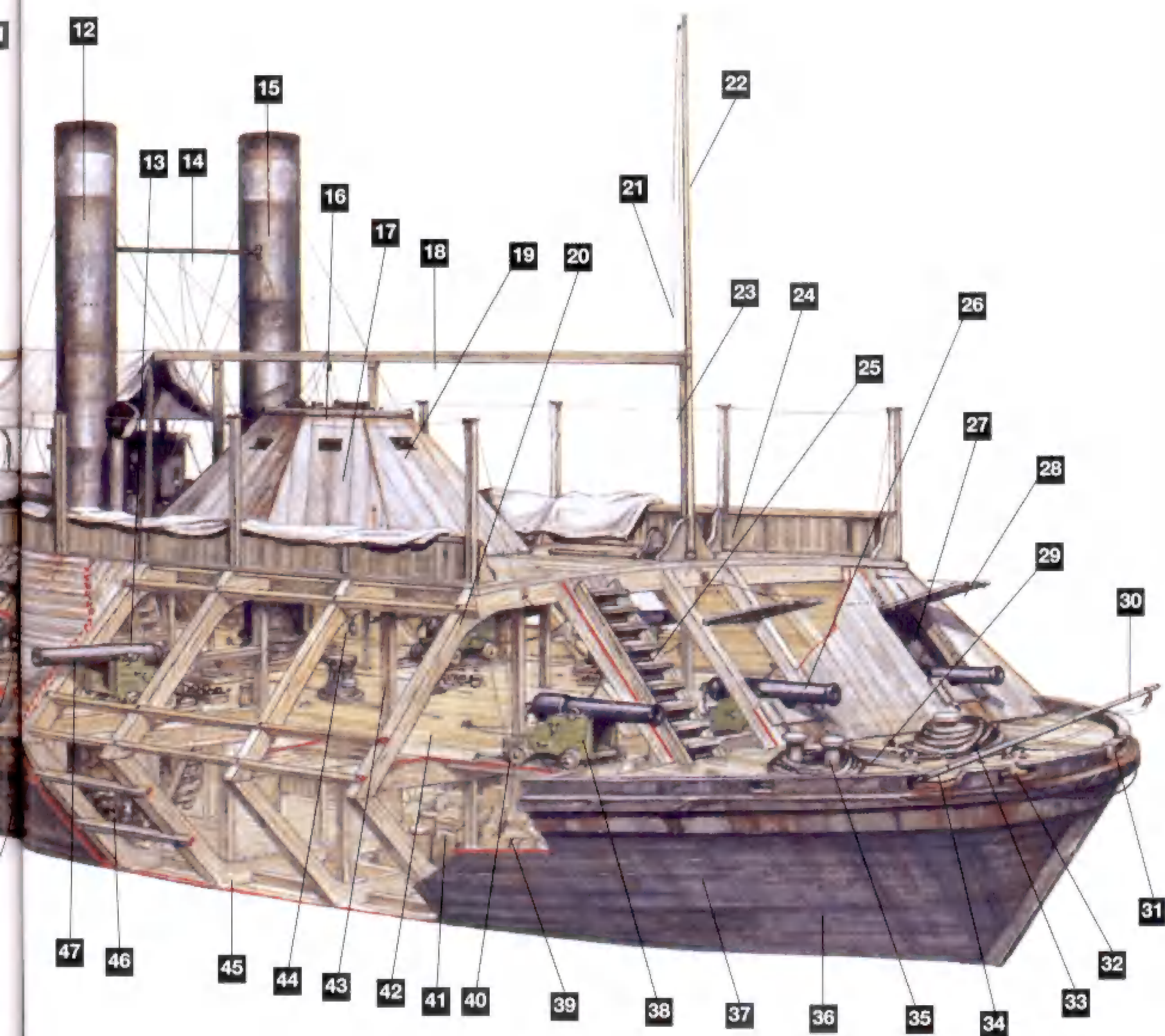
KEY

- 1 Extent of armored protection
- 2 Ship's boat (one of four)
- 3 Paddlewheel bearing
- 4 Deckhouse
- 5 Flagstaff
- 6 Union ensign
- 7 Armored paddlewheel box
- 8 Centerline paddlewheel
- 9 Privy
- 10 Captain's quarters
- 11 Steering rope (port)
- 12 Smokestack
- 13 Accomodation ladder
- 14 Stack brace
- 15 Identification band
- 16 Pilothouse grating
- 17 Pilothouse
- 18 Hogging brace
- 19 Ship's wheel
- 20 42-pounder rifle
- 21 Signal hoists
- 22 Signalling mast
- 23 Hogging brace supports
- 24 Protective bulwark
- 25 Ladder
- 26 30-pounder parrot rifle
- 27 Gunport
- 28 Gunport mantlet and lifting chain
- 29 Bower anchor
- 30 Davit
- 31 Railroad iron bow reinforce
- 32 Hawseport
- 33 Forward hatch
- 34 Bollard
- 35 Deck cleat
- 36 Boatswain's store
- 37 Shot locker
- 38 8-inch Dahlgren smoothbore (64-pounder, 63 cwt.)
- 39 Gunner's store
- 40 Gun carriage
- 41 Magazine
- 42 Gundeck (berth deck)
- 43 Hull support column
- 44 Steering rope (starboard)
- 45 Hull frames
- 46 Coal bunker
- 47 32-pounder smoothbore (42 cwt.)

- 48 Reinforced knuckle
- 49 Near horizontal engine
- 50 Boiler mezzanine support
- 51 Boiler 1-3
- 52 Boilers 4-5
- 53 Coal bunker
- 54 Rear horizontal engine (Merritt)
- 55 Condenser



- 56 Crankshaft
- 57 Hull curvature to assist paddlewheel flow
- 58 Officer's quarters
- 59 Crankshaft
- 60 Hull planking
- 61 Rudder
- 62 Side armor



E: USS Choctaw



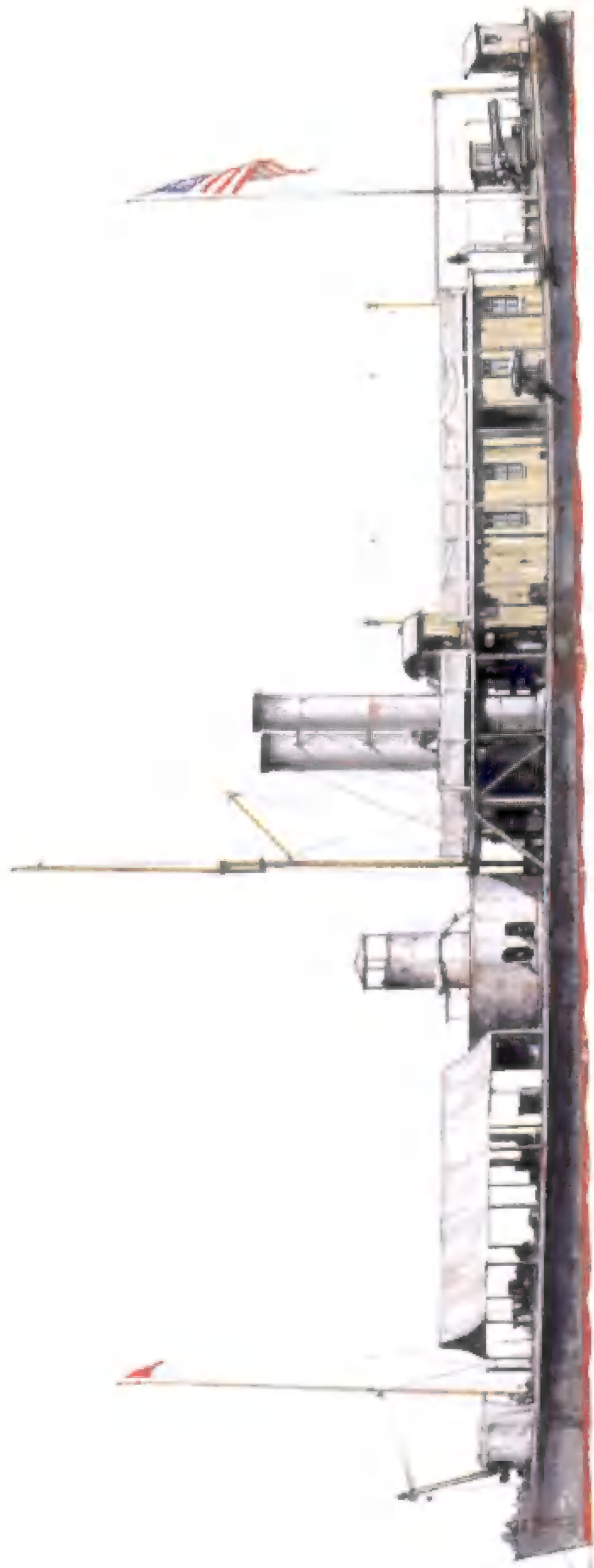
USS Tuscumbia



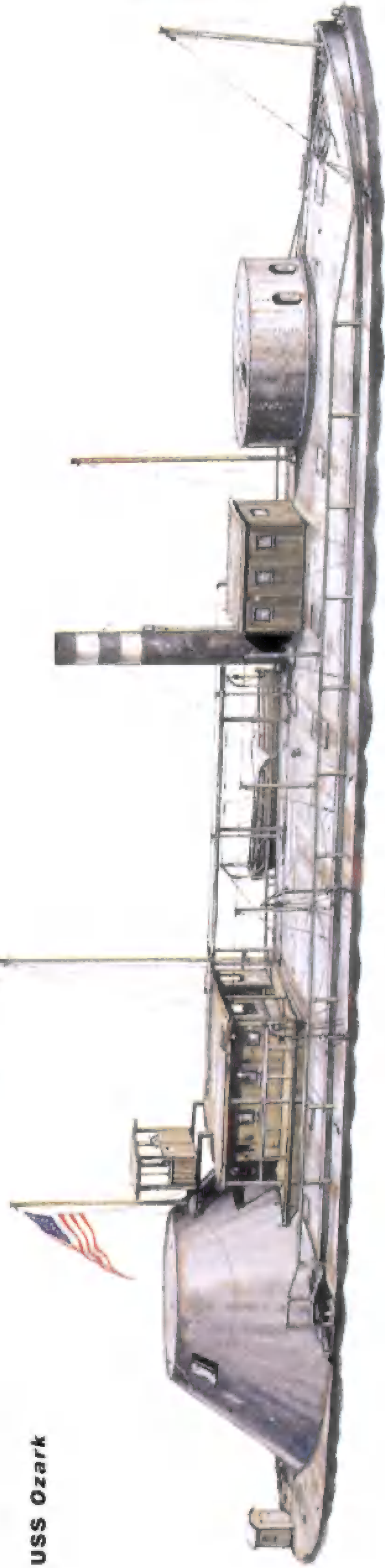


F: Running the Red River Rapids, May 1864

G: USS Neosho



USS Ozark



Commanders: Commander (later Captain) Henry Walke (January 1862–January 1863), Lieutenant-Commander James A. Greer (January–February 1863), Lieutenant J. McLeod Murphy (March–October 1863), Acting Master James C. Gipson (November 1863–January 1864), Lieutenant John G. Mitchell (February–November 1864), Acting Master Charles W. Miller (December 1864), Lieutenant Charles P. Clark (January 1865), Lieutenant John Rogers (February 1865–end of war).

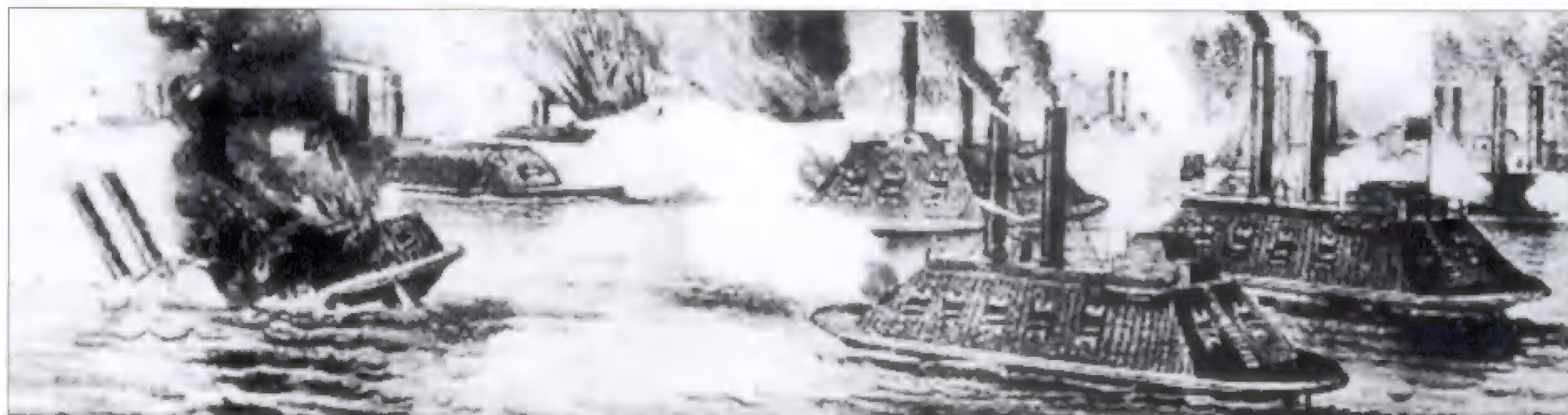
USS CINCINNATI

Class: City class [aka "Cairo class"] (7 in class)
Type: River casemate ironclad
Built: James B. Eads Yard, St. Louis, Missouri
Launched: October 1861
Commissioned: January 16, 1862
Length: 175ft
Beam: 51ft
Draught: 6ft
Displacement: 512 tons
Crew: 251 men
Propulsion: Centerline paddlewheel, two horizontal engines
Speed: 9 knots
Armor: 2½in. casemate, 1½in. pilothouse
Identified by: blue stripe on stacks
Armament: three 8-inch smoothbores, four 42-pounder rifles, six 24-pounder smoothbores, one 12-pounder rifle (deck gun). In September 1862 two of the 42-pounders were replaced by two 30-pounder rifles. By late 1864 her 8-inch guns had been replaced by 9-inch smoothbores, and her two remaining 42-pounders by two 100-pounder rifles.

Operational history: Assault on Fort Henry, Tennessee (February 1862). Assault on Island No. 10 (March–April 1862). Assault on Fort Pillow, Tennessee (April–May 1862). Rammed and sunk off Fort Pillow, May 10, 1862. Raised and repaired. Operations on Yazoo River (November–December 1862). Assault on Fort Hindman, Arkansas (January 1863). Operations at Vicksburg, Tennessee (May 1863). Sunk by shore batteries off Vicksburg, May 27, 1863. Raised and repaired. Joined Western Gulf Blockading Squadron (February 1863) Operations north of Mobile, Alabama (April–May 1865).

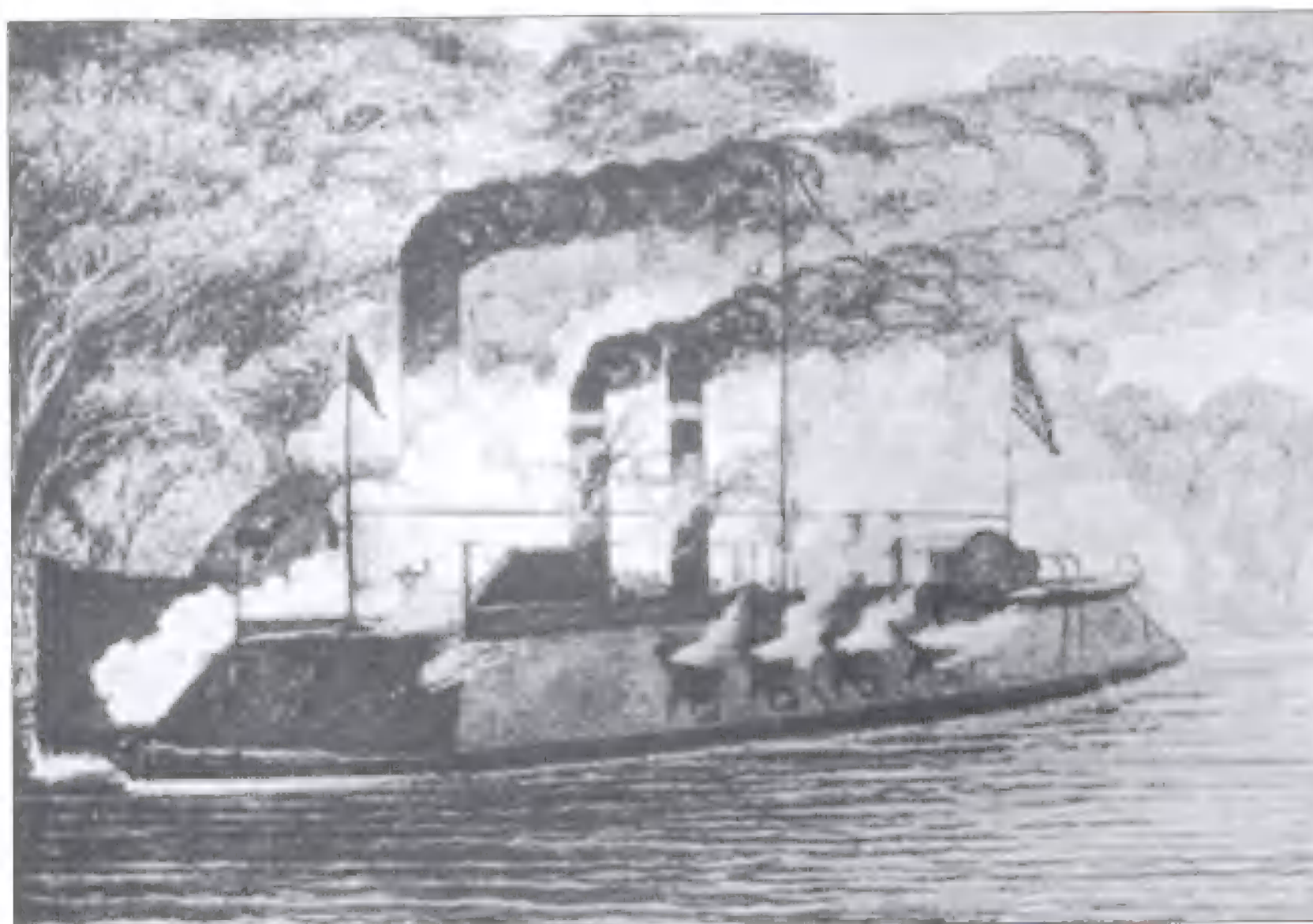
Commanders: Commander Roger N. Stembel (January–May 1862), Lieutenant John P. Hall (May–June 1862), Lieutenant Byron Wilson (July–October 1862), Lieutenant George M. Bache (November 1862–June 1863), Lieutenant Jason Goudy (August 1864–March 1865), Lieutenant-Commander George Brown (March 1865–end of war).

The Western Gunboat Flotilla in action during the naval engagement off Fort Pillow (labeled Fort Wright in the lithograph), May 10, 1862. Although inaccurate, it captures the frenetic nature of the battles off Fort Pillow and Memphis which decided the fate of the upper Mississippi River. (USNHC)



USS LOUISVILLE

Class:	City class [aka "Cairo class"] (7 in class)
Type:	River casemate ironclad
Built:	James B. Eads Yard, St. Louis, Missouri
Launched:	October 1861
Commissioned:	January 16, 1862
Length:	175ft
Beam:	51ft
Draught:	6ft
Displacement:	512 tons
Crew:	251 men
Propulsion:	Centerline paddlewheel, two horizontal engines
Speed:	9 knots
Armor:	2½ in. casemate, 1½ in. pilothouse
Identified by:	green stripe on stacks
Armament:	three 8-inch smoothbores, four 42-pounder rifles, six 32-pounder rifles, one 12-pounder rifle (deck gun). In September 1862 two of her 8-inch guns were removed, and three 9-inch smoothbores added, while two of the 42-pounders were replaced by two 30-pounder rifles. By 1864 she was fitted with a single 100-pounder rifle in place of her remaining 42-pounders, and her remaining 8-inch gun was replaced by a fourth 9-inch piece.
Operational history:	Assault on Fort Donelson, Tennessee (February 1862). Assault on Island No. 10 (March–April 1862). Battle of Memphis, June 6, 1862. Engagement with the CSS <i>Arkansas</i> above Vicksburg, July 15, 1862. Operations on Yazoo River (November–December 1862). Assault on Fort Hindman, Arkansas (January 1863). Operations off Vicksburg, Tennessee (April 1863). Assault on Grand Gulf, Mississippi (April 1863). Participated in the Red River Expedition (March–May, 1864).
Commanders:	Commander Benjamin M. Dove (January–September 1862), Lieutenant-Commander Richard W. Meade Jr. (September–December 1862), Lieutenant Robert K. Riley (December 1862), Lieutenant Elias K. Owen (December 1862–September 1864), Lieutenant-Commander George Bacon (October 1864–end of war).



The City class ironclad USS *Carondelet* pictured fighting the ironclad CSS *Arkansas* on the Yazoo River, July 15, 1862. This engraving was first published in Rear-Admiral Henry Walke's *Naval Scenes and Reminiscences of the Civil War in the United States*, 1877. Walke commanded the Union ironclad in the action during which she was badly damaged, and then abandoned. (CHC)



The well-defended city of Vicksburg, Tennessee, remained in Confederate hands until its surrender to General Ulysses S. Grant on July 4, 1863. Its high river bluffs were lined with Confederate heavy guns, and made any attempt to bypass the city an extremely hazardous undertaking. (Author's collection)

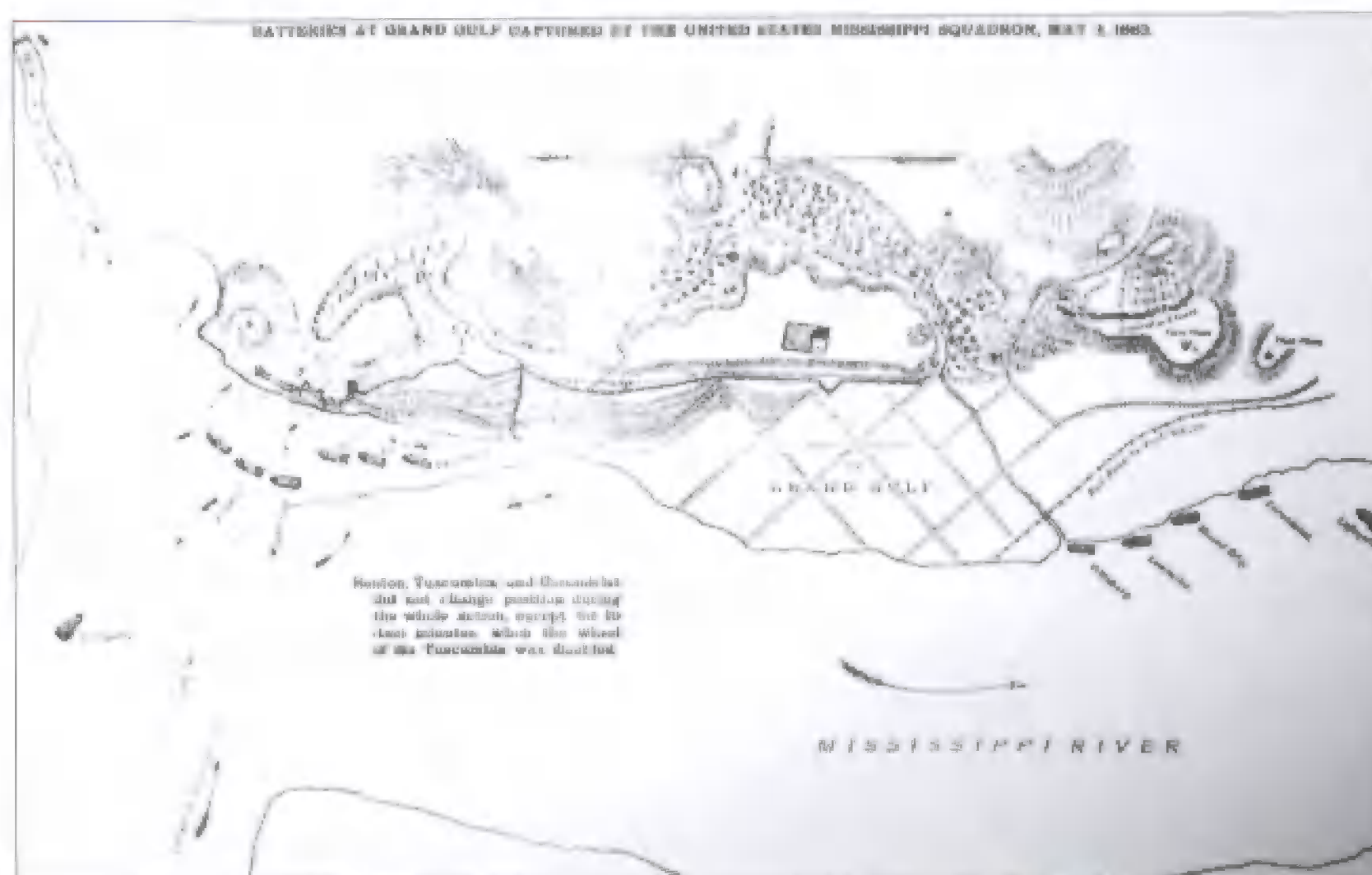
USS MOUND CITY

Class:	City class [aka "Cairo class"] (7 in class)
Type:	River casemate ironclad
Built:	James B. Eads Yard, Mound City, Illinois
Launched:	October 1861
Commissioned:	January 16, 1862
Length:	175ft
Beam:	51ft
Draught:	6ft
Displacement:	512 tons
Crew:	251 men
Propulsion:	Centerline paddlewheel, two horizontal engines
Speed:	9 knots
Armor:	2 1/2 in. casemate, 1 1/4 in. pilothouse
Identified by:	orange strip and/or star on stacks (varied over time)
Armament:	three 8-inch smoothbores, four 42-pounder rifles, six 32-pounder rifles, one 12-pounder rifle (deck gun). By 1863 two of the 42-pounders were replaced by a 30-pounder and a 50-pounder rifle. By 1864, her remaining two 42-pounders and two 32-pounders had been removed, and had been replaced by four 9-inch smoothbores. One further 32-pounder was also replaced by a single 100-pounder rifle.

Operational history: Action at Columbus, Kentucky (February 1862). Assault on Island No. 10 (March–April 1862). Assault on Fort Pillow, Tennessee (April–May 1862). Rammed twice and damaged off Fort Pillow, May 10–11, 1862. Repaired. Operations on White River, Arkansas (June 1862) and Yazoo River (August 1862). Damaged during bombardment of St Charles, Arkansas, June 17, 1862. Operations off Vicksburg, Tennessee (April–June 1863). Assault on Grand Gulf, Mississippi (April 1863). Participated in the Red River Expedition (March–May, 1864).

Commanders: Commander Augustus H. Kilty (January–August 1862), Acting Master John A. Duple (June–July 1862), Lieutenant-Commander William Gwin (August–September 1862), Lieutenant Byron Wilson (October 1862–January 1864), Lieutenant Amos R. Langthorne (February–November 1864), Acting Master Coleman (December 1864–January 1865), Lieutenant Griffith W.D. Patterson (January 1865–end of war).

Plan of the naval attack on Grand Gulf, Mississippi, in April 1863. In addition to combating the powerful Confederate shore defenses, the commanders of the seven river ironclads which took part in the attack had to cope with a five-knot current during the five-hour bombardment. Reproduced from the Official Records of the Union and Confederate Navies. (Author's collection)



USS PITTSBURGH

Class:	City class [aka "Cairo class"] (7 in class)
Type:	River casemate ironclad
Built:	James B. Eads Yard, St. Louis, Missouri
Launched:	October 1861
Commissioned:	January 25, 1862
Length:	175ft
Beam:	51ft
Draught:	6ft
Displacement:	512 tons
Crew:	251 men
Propulsion:	Centerline paddlewheel, two horizontal engines
Speed:	9 knots
Armor:	2½in. casemate, 1½in. pilothouse
Identified by:	light brown stripe on stacks, and tall funnels.
Armament:	three 8-inch smoothbores, two 42-pounder rifles, two 30-pounder rifles, six 32-pounder rifles, one 12-pounder smoothbore (deck gun). In May 1863, two of her 32-pounders were replaced by two 9-inch smoothbores, and by the end of the year one of her 8-inch smoothbores had been replaced by a 100-pounder rifle, and her 42-pounders had been switched for 9-inch rifles. In September 1862, two of her four remaining 32-pounders were removed.
Operational history:	Assault on Fort Donelson, Tennessee (February 1862), Assault on Island No. 10 (March–April 1862), Assault on Fort Pillow, Tennessee (April–May 1862), Operations on Yazoo River (November–December 1862), Assault on Fort Hindman, Arkansas (January 1863), Operations at Vicksburg, Tennessee (April 1863), Badly damaged during assault on Grand Gulf, Mississippi (April 1863), Repaired, and participated in attack on Fort Beauregard, Harrisonburg, Louisiana (May 1863), Operations on Red River (May 1863), and participated in the Red River Expedition (March–May 1864).
Commanders:	Commander Egbert Thompson (January–September 1862), Lieutenant-Commander William R. Hoel (October 1862–February 1865), Acting Master Morgan (March 1865–end of war).

USS ST. LOUIS

Class:	City class [aka "Cairo class"] (7 in class)
Type:	River casemate ironclad
Built:	James B. Eads Yard, St. Louis, Missouri
Launched:	October 1861
Commissioned:	January 31, 1862
Remarks:	On September 8, 1862 she was renamed the USS <i>Baron de Kalb</i>
Length:	175ft
Beam:	51ft
Draught:	6ft
Displacement:	512 tons
Crew:	251 men
Propulsion:	Centerline paddlewheel, two horizontal engines
Speed:	8 knots
Armor:	2½in. casemate, 1½in. pilothouse
Identified by:	yellow band on stacks
Armament:	three 8-inch smoothbores, four 42-pounder rifles, six 32-pounder rifles, one 12-pounder rifle (deck gun). In October 1862 two of her 42-pounders were replaced by 30-pounder rifles. Two months later two 10-inch smoothbores were added. By early 1863, one of these had been removed, along with one of her

8-inch smoothbores, and the pair were replaced by two 9-inch smoothbores. Her two remaining 42-pounders were also removed.

Operational history: Assault on Fort Henry and Fort Donelson, Tennessee (February 1862). Damaged during Fort Henry attack, but repaired. Attack on Columbus, Kentucky (February 1862). Assault on Island No. 10 (March–April 1862). Assault on Fort Pillow, Tennessee (April–May 1862). Battle of Memphis (June 1862). Operations on the White River (June 1862). Operations on Yazoo River (November–December 1862). Attack on Fort Hindman, Arkansas (January 1863), and on Fort Pemberton, Tallahatchie River (March 1863). Operations on Yazoo River (March–May 1863). Sunk by a torpedo off Yazoo City, July 13, 1863.

Commanders: Lieutenant Leonard Paulding (January–April 1862), Lieutenant Henry Erben (April–June 1862), Lieutenant Wilson McGunnegle (June–July 1862), Captain John A. Winslow (July–October 1862), Lieutenant-Commander John G. Walker (October 1862–July 1863).

USS BENTON

Class: Benton class (1 in class)
 Type: River casemate ironclad
 Converted at: James B. Eads Yard, St. Louis, Missouri
 Remarks: Formerly a catamaran-hulled snagboat known as Submarine No. 7. She served as the flagship of the Western Gunboat Flotilla. Nicknamed "Old Warhorse."

Bought into service: November 1861
 Commissioned: February 24, 1862
 Length: 202ft
 Beam: 72ft
 Draught: 9ft
 Displacement: 633 tons
 Crew: 176 men
 Propulsion: Stern paddlewheel, two inclined engines
 Speed: 5½ knots
 Armor: 2½in. casemate, 2½in. pilothouse
 Armament: two 9-inch smoothbores, seven 42-pounder rifles, seven 32-pounder rifles. By August 1862 three of her 42-pounders had been removed, and were replaced by an extra 32-pounder and two 50-pounder rifles. A 12-pounder howitzer was also carried as a deck gun. In January 1863, two of her 32-pounders were replaced by an additional pair of 9-inch smoothbores. By the end of the year, two 32-pounders and four 42-pounders had been removed, and were replaced by two 100-pounder rifles and another four 9-inch smoothbores, making her one of the most powerful vessels on the Mississippi.

Operational history: Assault on Island No. 10 (March–April 1862). Assault on Fort Pillow, Tennessee (April–May 1862). Battle of Memphis, June 6, 1862. Engagement with the CSS *Arkansas* above Vicksburg, July 15, 1862. Operations on Yazoo River (August–December 1862). Operations off Vicksburg, Tennessee (April–June 1863). Operations on Red River. Participated in the Red River Expedition (March–May, 1864). Expedition up Red River to capture the CSS *Missouri* (June 1865).

Commanders: Lieutenant-Commander S. Ledyard Phelps (March–September 1862), Lieutenant-Commander William Gwin (October–December 1862), Lieutenant George P. Lord (January–February 1863), Lieutenant-Commander James A. Greer (March 1863–September 1864), Lieutenant May (October 1864), Lieutenant-Commander Edward Y. McCauley (November 1864–end of war).

USS CHILlicothe

Class:	Chillicothe class (1 in class)
Type:	River casemate ironclad
Built:	Joseph Brown Yard, Cincinnati, Ohio
Launched:	October 8, 1862
Commissioned:	December 3, 1862
Length:	162ft
Beam:	50ft
Draught:	4ft
Crew:	80–100 men
Displacement:	395 tons
Propulsion:	Side paddlewheels and two screws, two engines
Speed:	7 knots
Armor:	2in. casemate, 3in. pilothouse, 1in. deck
Armament:	two 11-inch smoothbores. A 12-pounder smoothbore deck gun was added in October 1863.
Operational history:	Operations on White River, assault on Fort Hindman, Arkansas (January 1863). Operations on Yazoo River, attack on Fort Pemberton, Mississippi (March 1863). Participated in the Red River Expedition (March–April 1864).
Commanders:	Lieutenant-Commander James P. Foster (December 1862–September 1863), Lieutenant Henry St C. Eytinge (September–October 1863), Lieutenant P. Couthouy (November 1863–March 1864), Acting Master Smith (April–June 1864), Lieutenant George P. Lord (July 1864–end of war).

USS EASTPORT

Class:	Eastport class (1 in class)
Type:	River casemate ironclad ram
Remarks:	Incomplete Confederate ironclad, captured by Union gunboats at Cerro Gordo, Tennessee, on February 8, 1862. Completed at Mound City, then New Albany, Indiana, by August 1862, but problems with hull deterioration delayed her entry into active service.
Commissioned:	January 9, 1863
Length:	280ft
Beam:	43ft
Draught:	6½ft
Crew:	approximately 150 men
Displacement:	approximately 700 tons
Propulsion:	Side paddlewheels, two engines
Speed:	approximately 9 knots
Armor:	probably 2in. casemate
Armament:	six 9-inch smoothbores, two 100-pounder rifles. By June 1863 two of the 9-inch guns had been replaced by two 50-pounder rifles.
Operational history:	Grounded and damaged near Vicksburg, Tennessee (February 1863). Repaired. Participated in the Red River Expedition (March–April 1864). Badly damaged by mine on Red River, April 15, 1864. Destroyed to prevent capture, April 26, 1864.
Commanders:	Lieutenant-Commander Ledyard Phelps (January 1863–April 1864).

USS INDIANOLA

Class:	Indianola class (1 in class)
Type:	River casemate ironclad
Built:	Joseph Brown Yard, Cincinnati, Ohio
Launched:	September 4, 1862
Commissioned:	January 14, 1863
Length:	175ft
Beam:	52ft
Draught:	5ft
Crew:	144 men
Displacement:	511 tons
Propulsion:	Side paddlewheels and two screws, four engines
Speed:	6 knots
Armor:	3in. casemate (2in. at rear), 1in. deck
Armament:	two 11-inch smoothbores (forward), two 9-inch smoothbores (aft)
Operational history:	Operations off Vicksburg, Tennessee (February 1863). Blockade of Red River (February 1863). Rammed during engagement with Confederate gunboats off New Carthage, Mississippi, February 24, 1863. Grounded and captured. Destroyed by Confederates to prevent re-capture, March 4, 1863. Raised January 1865.
Commanders:	Lieutenant-Commander George Brown (October 1862–March 1863)

The USS *Neosho* bombarding a Confederate shore battery at Bell's Mill, below Nashville, Tennessee, December 6, 1864. She was hit over 100 times in this action, without sustaining any real damage. She silenced the Confederate battery. Lithograph. (USNHC)



USS CHOCTAW

Class:	Choctaw class (1 in class)
Type:	River casemate ironclad ram
Remarks:	Formerly the river steamer <i>Nebraska</i> , she was acquired by the US Navy on September 27, 1862, renamed, and converted into an ironclad in New Albany, Indiana (some accounts state St. Louis, Missouri).
Commissioned:	March 23, 1863
Length:	260ft
Beam:	69ft
Draught:	8ft
Crew:	106 men
Displacement:	1,004 tons
Propulsion:	Side paddlewheels, two engines
Speed:	7 knots
Armor:	2in. casemate (1in. at rear, plus 1in. of inner rubber lining), 2in. pilothouse, 1in. deck
Armament:	one 9-inch smoothbore, one 100-pounder rifle, two 30-pounder rifles. In May 1863 two 24-pounder smoothbores were added. By September 1863 the 24-pounders had been replaced by two 12-pounder rifles, and two additional 9-inch smoothbores.
Operational history:	Operations on Yazoo River (April–May 1863). Damaged during attack on Hayne's Bluff, Mississippi, but repaired. Participated in the Red River Expedition (March–May 1864). Pursuit of the CSS <i>Webb</i> (April 1865).
Commanders:	Lieutenant-Commander Francis M. Ramsay (March 1863–September 1864), Lieutenant-Commander John J. Cornwell (October 1864–end of war).

USS LAFAYETTE

Class:	Lafayette class (1 in class)
Type:	River casemate ironclad ram
Remarks:	Formerly the river steamer <i>Aleck Scott</i> , she was purchased for use as an Army transport in 1861, and renamed the USS <i>Fort Henry</i> . On September 14, 1862 she was acquired by the US Navy for use as an ironclad, and was converted at the James B. Eads Yard, St. Louis, Missouri, where she was renamed.
Commissioned:	February 27, 1863
Length:	280ft
Beam:	45ft
Draught:	8ft
Crew:	210 men
Displacement:	1,193 tons
Propulsion:	Side paddlewheels, two engines
Speed:	4 knots
Armor:	2 $\frac{1}{2}$ in. casemate (plus 2in. of inner rubber lining), $\frac{1}{2}$ in. deck
Armament:	two 11-inch smoothbores, four 9-inch smoothbores, two 100-pounder rifles. In April 1863 four 24-pounder howitzers were added. In May 1863, two of her 9-inch guns were removed, together with two of the 24-pounders. Two 12-pounder howitzers were fitted in their place.
Operational history:	Operations off Vicksburg, Tennessee (April 1863). Assault on Grand Gulf, Mississippi (April 1863). Expedition up Red River to capture the CSS <i>Webb</i> (May 1863). Participated in the Red River Expedition (March–May 1864). Expedition up Red River to capture the CSS <i>Missouri</i> (June 1865).
Commanders:	Captain Henry Walke (February–August 1863), Lieutenant-Commander James P. Foster (September 1863–end of war).



The City class ironclad USS *Cincinnati*, photographed somewhere on the Western rivers, most probably the Mississippi, during the spring of 1863. Laundry lines have been rigged from her mainmast, and awnings have been spread to cover her exposed spar deck from the sun's rays. (USNHC)



"United States Mississippi Gunboats being built at Carondelet, near St Louis, Missouri." Engraving published in Harper's Weekly, October 5, 1861. Although somewhat inaccurate, it purports to show the construction of the wooden frames of four of the City class vessels. (USNHC)



Henry A. Walke, USN (1809-96), pictured after his promotion to rear-admiral in 1870. This highly experienced Virginian-born naval officer commanded the *USS Carondelet* in 1862, then went on to command the *USS Lafayette*. He was promoted to the rank of captain in August 1862, making him one of the most senior naval officers in the Western Gunboat Flotilla. (CHC)

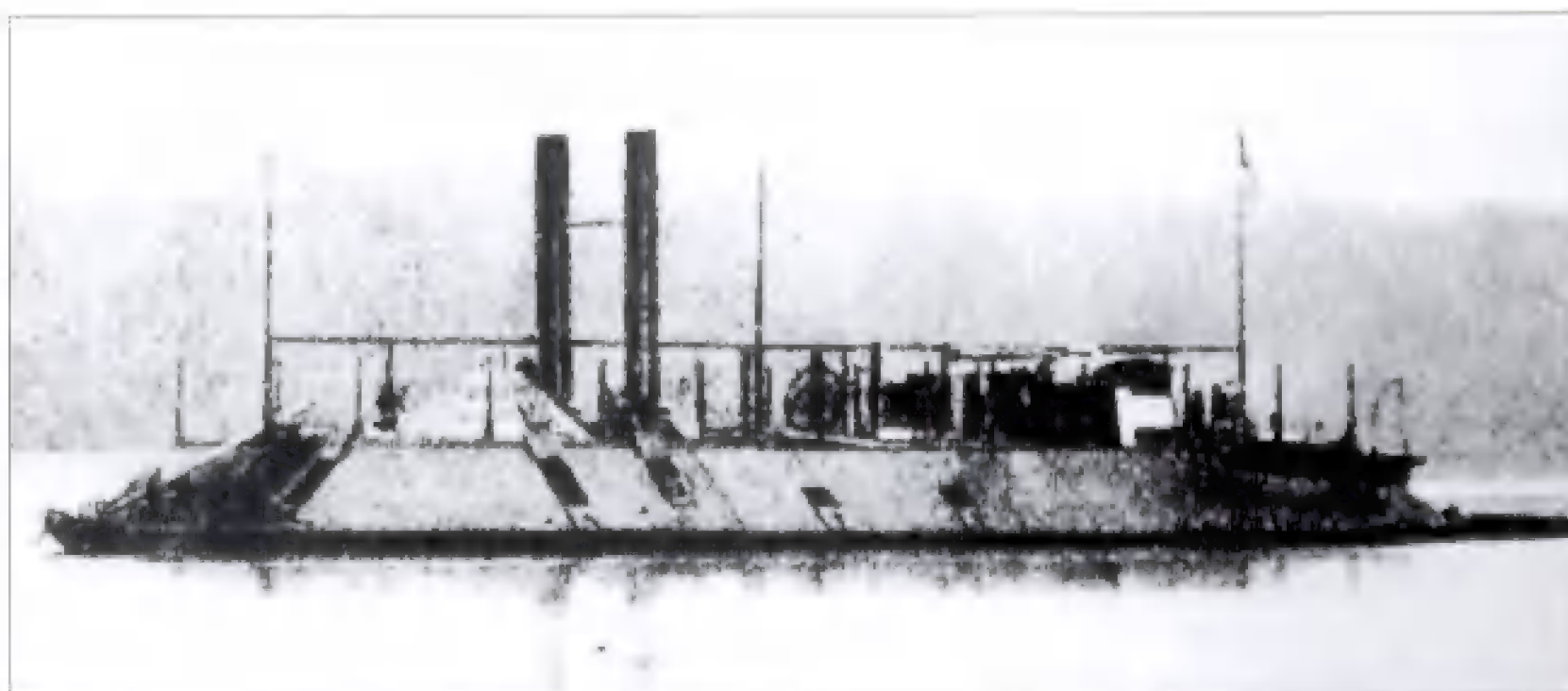
USS TUSCUMBIA

Class:	Tuscumbia class [aka "Improved Chillicothe class"] (1 in class)
Type:	River casemate ironclad
Built:	Joseph Brown Yard, New Albany, Indiana
Launched:	December 12, 1862
Commissioned:	March 12, 1863
Length:	178ft
Beam:	75ft
Draught:	7ft
Crew:	130 men
Displacement:	575 tons
Propulsion:	Side paddlewheels and single screw, four engines
Speed:	10 knots
Armor:	3in. casemate (2in. at rear), 1in. deck
Armament:	three 11-inch smoothbores (forward), two 9-inch smoothbores (aft)
Operational history:	Operations on Tennessee River, attack on Fort Heiman (March 1863). Operations on Yazoo River (April 1863). Operations off Vicksburg, Tennessee (April 1863). Assault on Grand Gulf, Mississippi (April 1863). Damaged but repaired. Structural and mechanical problems prevented further active service. Decommissioned in February 1865.
Commanders:	Lieutenant-Commander James W. Shirk (March-October 1863).

USS NEOSHO

Class:	Neosho class (2 in class)
Type:	River monitor
Built:	Union Ironworks, Carondelet, Missouri
Launched:	February 18, 1863
Commissioned:	May 13, 1863
Length:	180ft
Beam:	45ft
Draught:	4½ft
Crew:	100 men
Displacement:	523 tons
Propulsion:	Stern paddlewheel, two horizontal engines
Speed:	7½ knots
Armor:	2½in. hull, 6in. turret, 1¼-2 in. deck
Armament:	two 11-inch smoothbores (turret); one 12-pounder rifle (deck gun) added in mid-1864
Operational history:	Attack on Morganza, Louisiana (December 1863). Participated in the Red River Expedition (March-May, 1864). Operations on Tennessee and Cumberland Rivers (December 1864).
Commanders:	Lieutenant Samuel Howard (September 1863-end of war).

The City class casemate ironclad *USS Louisville*, photographed somewhere on the Western rivers during the last years of the Civil War. The photograph was reproduced from Francis Trevelyn Miller, *The Photographic History of the Civil War*, Volume 6. (USNHC)



USS OSAGE

Class:	Neosho class (2 in class)
Type:	River monitor
Built:	Union Ironworks, Carondolet, Missouri
Launched:	January 13, 1863
Commissioned:	July 10, 1863
Length:	180ft
Beam:	45ft
Draught:	4½ft
Crew:	100 men
Displacement:	523 tons
Propulsion:	Stern paddlewheel, two horizontal engines
Speed:	12 knots
Armor:	2½in. hull, 6in. turret, 1½in. deck
Armament:	two 11-inch smoothbores (turret); one 12-pounder rifle (deck gun) added in mid-1864
Operational history:	Operations on the Black River, Louisiana (February 1864). Operations on Ouachita River, Louisiana (March 1864). Damaged by enemy shore batteries. Repaired. Participated in the Red River Expedition (March–May, 1864). Ran aground and damaged (June 1864). Repaired. Served in Western Gulf Blockading Squadron from early 1865. Sunk by a torpedo on the Blakely River, Alabama, March 29, 1865.
Commanders:	Commander John C. Febiger (May–July 1863), Lieutenant Joseph P. Couthouy (July–October 1863), Lieutenant Wright (November 1863–February 1864), Lieutenant-Commander Thomas O. Selfridge Jr. (March–May 1864), Lieutenant George W. Rogers (September 1864–January 1865), Lieutenant-Commander William M. Gamble (January–March 1865).

USS OZARK

Class:	Ozark class (1 in class)
Type:	River monitor
Built:	Hambleton's Yard, Collier, Peoria, Illinois
Launched:	February 18, 1863
Commissioned:	February 18, 1864
Length:	180ft
Beam:	50ft
Draught:	5ft
Crew:	120 men
Displacement:	578 tons
Propulsion:	Twin screws, four engines (type unknown)
Speed:	6 knots
Armor:	2½in. hull, 6in. turret, 1½in. deck
Armament:	two 11-inch smoothbores (turret); one 10-inch smoothbore, three 9-inch smoothbores (deck)
Operational history:	Participated in the Red River Expedition (March–May, 1864).
Commanders:	Acting Master George W. Browne (March 1864–March 1865), Acting Master John Powell (April 1865–end of war).

OTHER RIVER IRONCLADS

In addition to the above ironclads, two other classes of warships are worth noting, though they did not see active service on the Mississippi River.

Milwaukee class

These four large twin-turreted river monitors (*Chickasaw*, *Kickapoo*, *Milwaukee*,

and *Winnebago*) have been described in *Union Monitor 1861–65* (Osprey New Vanguard Series, No. 45). Although designed as river ironclads, they all saw service with the Western Gulf Blockading Squadron, and played no active part in the battle for the Mississippi River and its tributaries.

Length:	229ft
Beam:	56ft
Draught:	6ft
Crew:	138 men
Displacement:	1,300 tons
Propulsion:	Four screws, four horizontal engines
Speed:	9 knots
Armor:	8in. turret and pilothouse, 1½in. deck and hull
Armament:	four 11-inch smoothbores in two twin-turrets

Marietta class

These single-turreted river monitors (*Marietta* and *Sandusky*) were laid down in 1862 at the Tomilson, Hartapee & Co. Yard at Pittsburgh, Pennsylvania. Although both vessels were launched in January 1865, the war ended before they were commissioned.

Length:	170ft
Beam:	50ft
Draught:	5ft
Crew:	100 men
Displacement:	479 tons
Propulsion:	Single screw, two engines
Speed:	9 knots
Armor:	6in. turret and pilothouse, 1¼in. deck and hull
Armament:	two 11-inch smoothbores in single twin-turret

BIBLIOGRAPHY

The following readily available books are recommended for those interested in further reading on the subject. Canney's *Lincoln's Navy* contains a more extensive listing of relevant publications.

Canney, Donald L., *Lincoln's Navy: The Ships, Men and Organization, 1861–65*, Conway Maritime Press, 1998

Coombe, Jack D., *Thunder along the Mississippi: The river battles that split the Confederacy*, Sarpedon, 1996

Gosnel, Alan, *Guns on the Western Waters: The story of river gunboats in the Civil War*, Louisiana State University Press, 1949

Jones, Virgil Carrington, *The Civil War at Sea*, Holt & Rinehart, 1961

Musicant, Ivan, *Divided Waters: The Naval History of the Civil War*, Castle Books, 1995

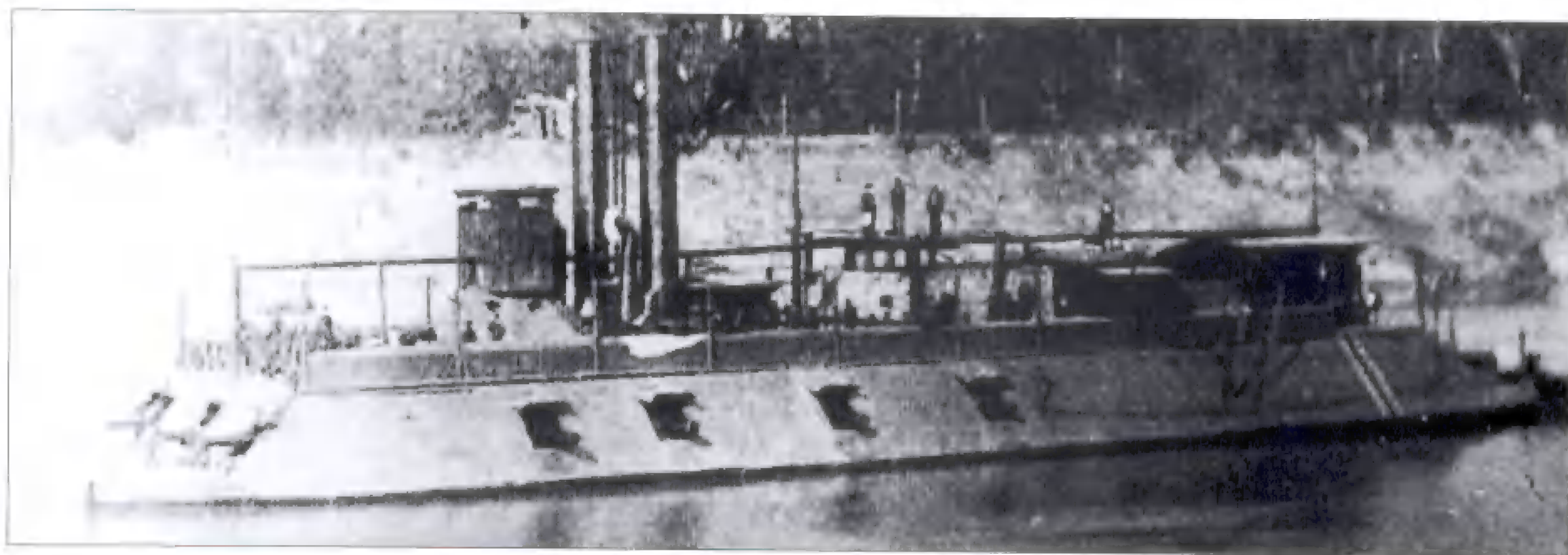
Nash, Howard P., Jr., *A Naval History of the Civil War*, A.S. Barnes & Co., 1972

Ripley, Warren, *Artillery and Ammunition of the Civil War*, Van Nostrand, 1970

Rush, Richard (ed.), *Official Records of the Union and Confederate Navies in the War of the Rebellion* [303 volumes], Government Printing Office, 1895–1921

Silverstone, Paul H., *Warships of the Civil War Navies*, Naval Institute Press, 1989

Underwood, Robert (ed.), *Battles and Leaders of the Civil War, being for the most part contributions by Union & Confederate Officers* [4 volumes], originally printed in *Century Magazine*, 1884–87; reprinted by Castle Books, 1956



COLOR PLATE COMMENTARY

Plate A: USS *Essex*, USS *Benton*

In September 1861 the US Army purchased the centerline paddle ferryboat *New Era* for conversion into a wooden gunboat. Renamed the *Essex*, she was then converted by James B. Eads of St. Louis into a casemate ironclad. Her distinctively high casemate housed two decks, a lower gundeck and an upper accommodation level. A semi-spherical steel cupola topped her well-protected round pilothouse, and combined with her slab-sides, this gave her a unique profile on the Western rivers. The *Essex* saw service at Fort Henry (when she was hit in the steam drum), at Vicksburg, Natchez, Port Hudson (when she was damaged again), and on the Red River. She was widely regarded as an unlucky ship, as she was frequently damaged or suffered from some kind of mechanical problem. Despite this, she was a vital part of the river ironclad fleet.

The USS *Benton* began life as a river recovery vessel, or "snagboat" known as Submarine No. 7. She was converted into an ironclad following a design proposed by James B. Eads which involved decking over the space between the vessel's two catamaran hulls, which became the gundeck. This was then protected by an armored casemate, and topped with an armored pilothouse. Her bow was also redesigned. When she entered service in February 1862 she was considered the most powerful vessel in Western waters,

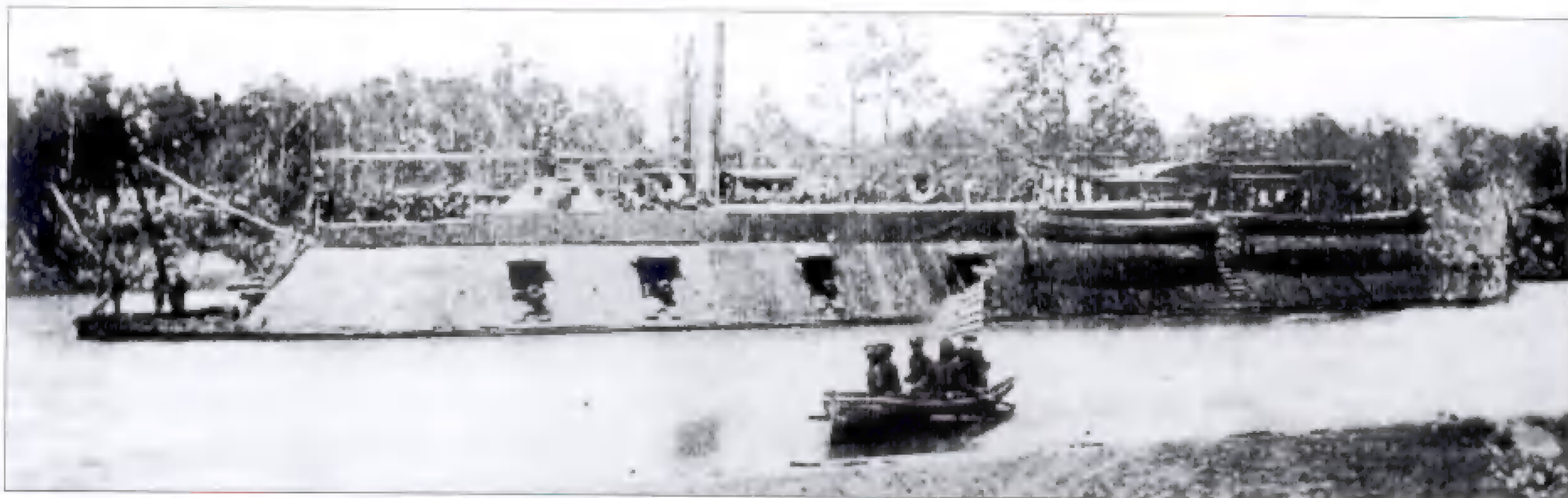
The City class ironclad USS *Mound City* can be identified from the other vessels in her class by the distinctive structure built on top of her armored pilothouse to improve visibility, the deckhouse built in front of her stern paddlewheel box, and by the identifying stars on her smokestacks, a design she alternated with orange-colored bands. (USNHC)

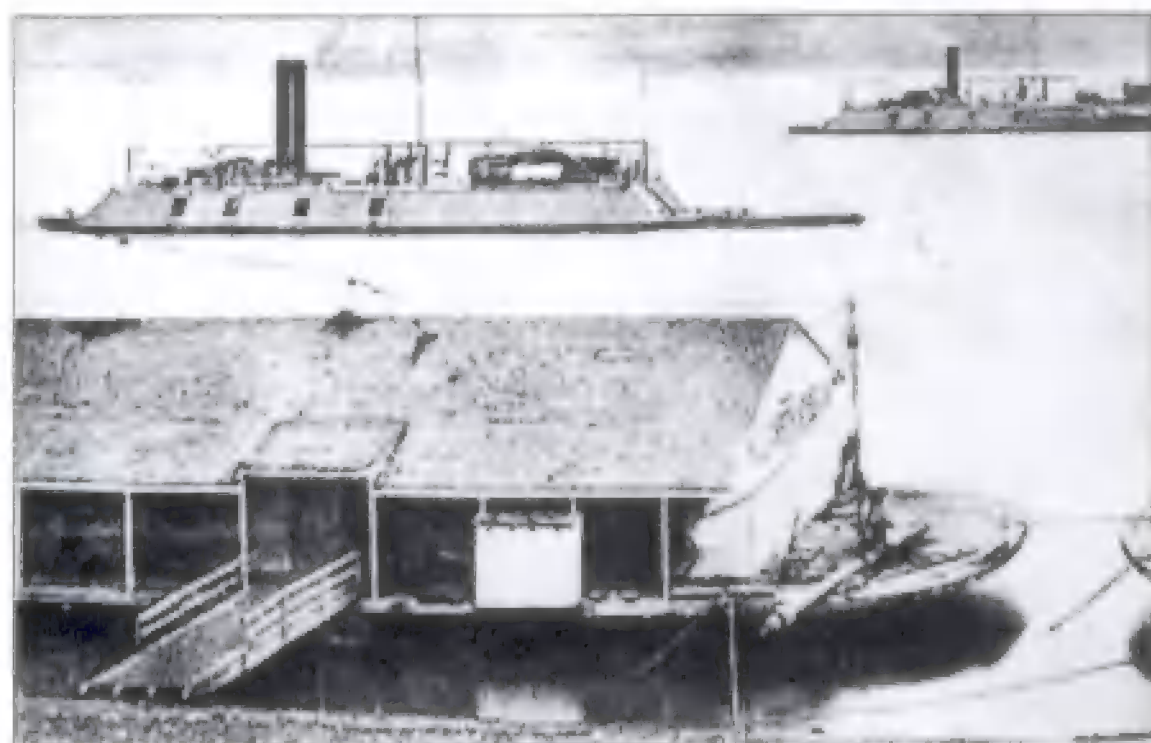
and she was duly made the flagship of the Western Gunboat Flotilla. She saw active service during the war at Island No. 10, Fort Pillow, Memphis, Vicksburg, the upper Yazoo River, and on the Red River.

Plate B: The USS *Mound City* running past Vicksburg, April 1863

In April 1863 Admiral Porter's river ironclads above Vicksburg were ordered to pass the city during the night of April 16, and join the ocean-going fleet further downstream. He prepared his ships by painting the hulls and casemates black, and piling logs around the engine housings, and spreading damp hay on the upper decks. In addition, tugboats, coal barges or small gunboats were lashed to the starboard side of the warships for extra buoyancy.

The City class ironclad USS *Pittsburgh*, photographed somewhere on the Western rivers during the war. She participated in many of the main actions of the war, including the attacks on Fort Donelson, Island No. 10, Fort Pillow, Vicksburg, and Grand Gulf. (USNHC)





The photographer captured the City class ironclads USS *Baron de Kalb* (formerly *St. Louis*) with the USS *Cincinnati* (right) at anchor on the Mississippi River, off Cairo, Illinois, in early 1863. In another version of the photograph, the USS *Mound City* can be seen anchored behind the *Cincinnati*. (USNHC)

Porter in the USS *Benton* would lead, followed by the USS *Lafayette*, then the four Cairo class ironclads USS *Louisville*, USS *Mound City*, USS *Pittsburgh* and USS *Carondelet*. Three army transports and the USS *Tuscumbia* brought up the rear. At 20.00 hours they got underway, increasing their speed as they turned the bend into the southerly curve of the Mississippi River which flowed past Vicksburg and its commanding bluffs. Alerted to the presence of the squadron by sentries, the Confederates lit tar barrels along the shore and fired calcium flares into the night sky to illuminate the targets for their gunners. At this point most of the accompanying barges were cast loose, as they were proving an encumbrance, and the Union ships opened fire as they ran past the shore batteries. The fire was returned tenfold, but despite the fearful exchange of shot, all of the ironclads survived the passage, battered but unbowed.

In this depiction the view is shown from the perspective of an observer on the *Louisville*, and shows the *Mound City* in the foreground, followed by the two other City class ironclads which followed behind her.

Plate C: USS *Chillicothe*, USS *Indianola*

Designed by the naval architect Samuel Hartt, the USS *Chillicothe* was a small, vulnerable casemate ironclad, and was virtually a smaller version of the USS *Tuscumbia*, whose plans had already been drawn up when the *Chillicothe* was ordered. She shared the structural defects and design faults of the larger ship, and it was found that her hull was hard-pressed to carry the weight of her armor and ordnance. She carried two 11-inch Dahlgren smoothbores in her bow, which gave her a powerful punch which partly overcame her other faults. Unfortunately her poor armored protection led to her being damaged during the attack on Fort Pemberton on the Tallahatchie River. Although she participated in the Red River expedition, she took little active part in the war after the summer of 1864.

The USS *Indianola* was designed by Joseph Brown of Cincinnati, and was designed to incorporate improvements over the City class of river ironclads. Two 11-inch Dahlgren smoothbores mounted on pivots were fitted in a forward casemate which allowed the guns to be fired from three ports (forward, abeam and on the stern quarter). Two 9-inch Dahlgrens fired astern out of ports fitted between the ironclad's twin side paddlewheels. Her one design flaw was her additional twin screws, whose machinery took up all the space that would otherwise have been available for the crew's quarters. She was captured by a trio of Confederate rams, but the vessel had to be destroyed before it could be pressed into Confederate service.

Plate D: USS *Cairo*

One of seven City class casemate ironclads, the USS *Cairo* was the fastest ironclad in its class, and one of the most unfortunate. Along with two sister ships, she was built at Mound City, Illinois, during late 1861, and she entered service on January 25, 1862. Within three weeks she was in action at Fort Henry, Tennessee, then went on to take part in

The large ironclad USS *Benton*, photographed at anchor off Natchez, Mississippi, in mid-1864. Her powerful armament and spacious gundeck made her an ideal choice as flagship of the Western Gunboat Flotilla in the early part of the Mississippi River campaign. (USNHC)



the assaults on Island No. 10 and Fort Pillow. She played a leading part in the naval Battle of Memphis (June 6, 1862), and was refitted in the late summer of 1862.

On December 12, 1862, during an expedition up the Yazoo River she struck two torpedoes (mines), and sunk. Her remains were discovered in 1956, and the hull was raised. The ironclad's skeletal remains now form part of a naval display at the Vicksburg Military Park, Tennessee.

Plate E: USS *Choctaw*, USS *Tuscumbia*

The USS *Choctaw* and her near sister the USS *Lafayette* were designed to be a second generation of river ironclads, incorporating all the improvements which had been suggested from experience with the City class vessels. Designed by Commander William Porter, the *Choctaw* was converted from a river steamer, and entered service on March 23, 1863. Although Porter had designed her as a ram, she lacked the power to use her reinforced bows as a weapon. Her main armament was concentrated in a forward casemate, while two smaller guns fired from broadside and stern ports. In addition, two 24-pounder howitzers were placed beneath her pilothouse, where they could sweep her decks if anyone tried to board her. She saw extensive service around Vicksburg, and on the Yazoo and Red Rivers during the last years of the war.

The USS *Tuscumbia* was laid down in early 1862 and commissioned a year later, in March 1863. Although designed by the experienced naval architect Joseph Brown, her hull construction was subcontracted to a New Albany builder who took little care in the quality of his work. As a result the vessel was poorly and hastily built, and the strength of the hull was insufficient to support the weight of the armor the vessel was designed to carry. It had originally been envisaged that she would be a smaller version of the *Choctaw* design, and a larger and better armored version of the *Chillicothe*. Instead, she was a white elephant, lacking the *Choctaw*'s ruggedness and suffering from the same structural and mechanical problems which plagued the *Chillicothe*. The deck soon warped, and reinforcements had to be added to protect her boilers. Both pilothouse and paddlewheels were exposed, so after a dismal performance during the attack on Grand Gulf, Mississippi, in April 1863, she was withdrawn from service. She was decommissioned before the war had even ended, and her crew reassigned to more useful vessels.



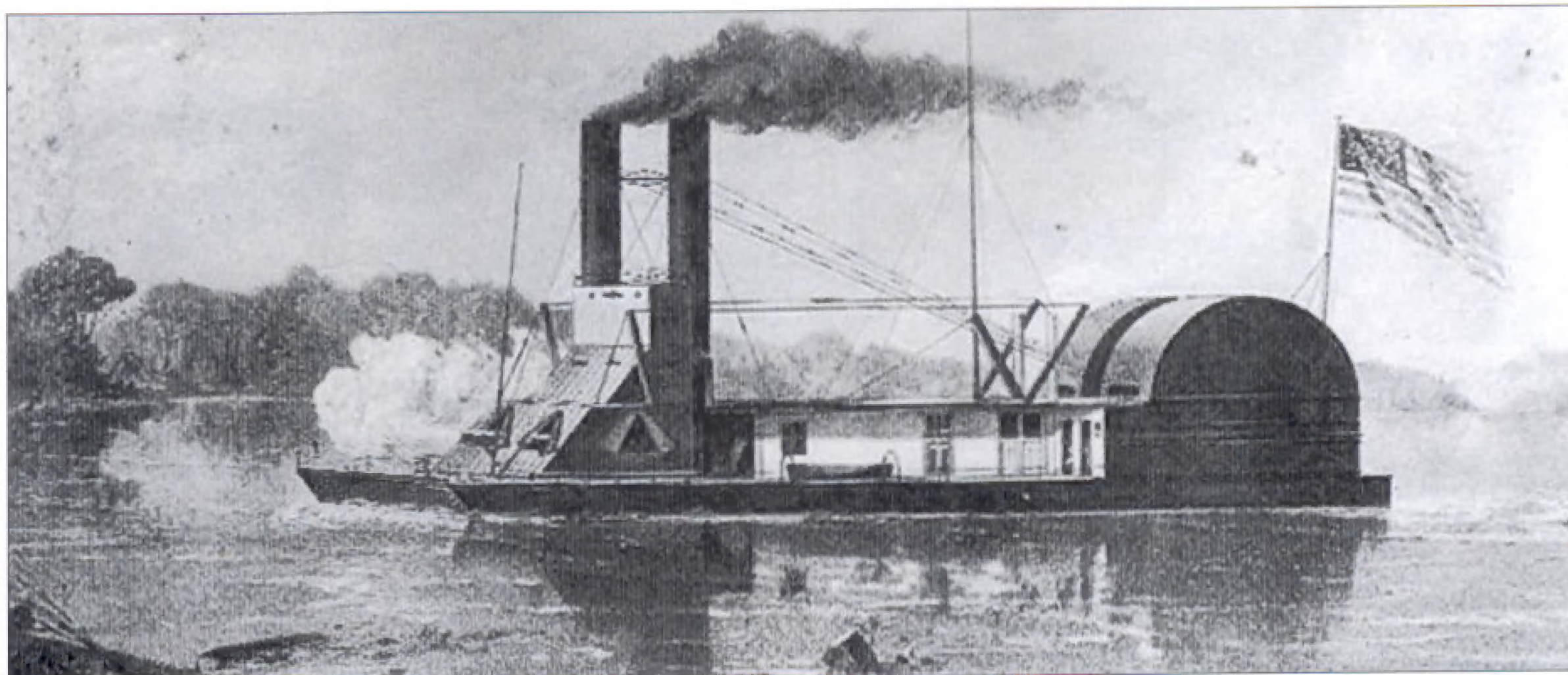
The USS *Osage* and USS *Neosho* depicted running through a gap in the Red River Dam near Alexandria, Arkansas, on May 9, 1864. The passage took advantage of an accidental break in the dam, which had been built by the Army to raise the river level and so rescue the Union warships trapped on the Red River. Watercolor by James Alden. (USNHC)

Plate F: Running through the Red River Dam, May 1864

During the Red River Campaign of early 1864, Union military setbacks and falling river levels made it highly likely that Admiral Porter's fleet of Union ironclads would be stranded on the Red River near Alexandria, Louisiana, unable to cross a stretch of shallows and rocks below the city. What followed was a stroke of engineering genius. A former civil engineer turned cavalry commander offered to build a dam, to raise the water level. The river was some 250 yards wide just below the rocks, but the engineers, aided by 3,000 soldiers, built a wooden tree dam to block the river, helped by a rock outcrop on the southern side of the river. Three coal barges were sunk to block the central section, and the water levels rose. On May 9 the water pressure drove two of the barges downstream, forcing a torrent of water to run through the gap. Porter ordered the USS *Lexington*, USS *Osage*, USS *Neosho* and the USS *Fort Hindman* to "surf" through the gap. Six ironclads were still stranded upstream, so a secondary dam was built further upstream, channelling the water so the water level in the central portion of the river rose high enough for the remaining ships to ride through two days later, on May 11.

The plate shows the passage of the USS *Carondolet*, USS *Pittsburgh* and the USS *Mound City*, watched by onlookers on the shore. Some of the ironclads' side armor had been removed before the attempt, and many of their guns and stores had also been landed and hauled along the

The USS *Essex*, featured in an engraving by F.H. Schell illustrating the capture of Baton Rouge, Louisiana, by Federal forces on December 17, 1862. She appears to be firing one of her stern guns, probably as a signal. (USNHC)



The strangely shaped USS *Chillicothe*, in an engraving published in *Bufford's Magazine* in 1864. She was a smaller version of the USS *Tuscumbia*, and shared the same defects of design and poor construction. The wire stays prevented the hull from warping ("hogging"). (USNHC)

bank in order to lighten the ships for the attempt. All three ironclads passed through the dam safely, although it took another day for the USS *Chillicothe*, USS *Ozark* and the USS *Baron de Kalb* to make the crossing. Army engineers had saved the fleet, which in turn had been placed at risk by the poor performance of the Army.

Plate G: USS *Neosho*, USS *Ozark*

The two ironclads of the *Neosho* class were a radical design departure from all that had gone before. An initial design for a new generation of river ironclad was adapted to incorporate a turret when "monitor fever" swept the Union following the engagement between the USS *Monitor* and the CSS *Virginia* (March 1862). James B. Eads produced a design that had a single, well protected turret, mounted on a cambered deck. A stern paddlewheel was protected by a mound-like armored

box, but the deckhouse and pilothouse remained unprotected to conserve weight. Commissioned in May 1863, the USS *Neosho* proved her worth during operations on the Red River and the Cumberland River, and was regarded as a useful element of the fleet.

The USS *Ozark* was also a single-turreted monitor, and was designed to incorporate a large turret surmounted by an armored pilothouse, and a wooden casemate structure astern of it. Four of her six guns were mounted in exposed positions on the after deck, although it seems that a wooden deck hut was extended to provide a modicum of cover later in her career. She participated in the Red River campaign, and although her lack of speed and protection made her vulnerable, she continued her active patrols in the Mississippi River and its tributaries until the end of the war.

Admiral David Porter's river ironclads depicted during the bombardment of Grand Gulf, Mississippi, on April 29, 1863. The ships depicted are (from left to right), the *Benton*, *Tuscumbia*, *Pittsburgh*, *Lafayette*, *Louisville*, *Baron de Kalb*, and *Carondolet*. (USNHC)



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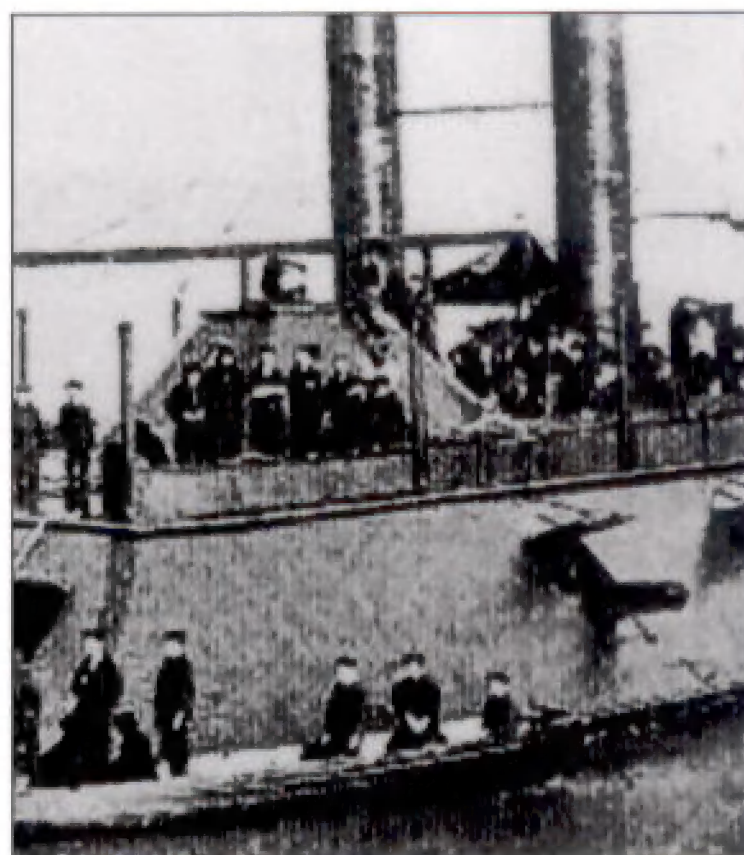
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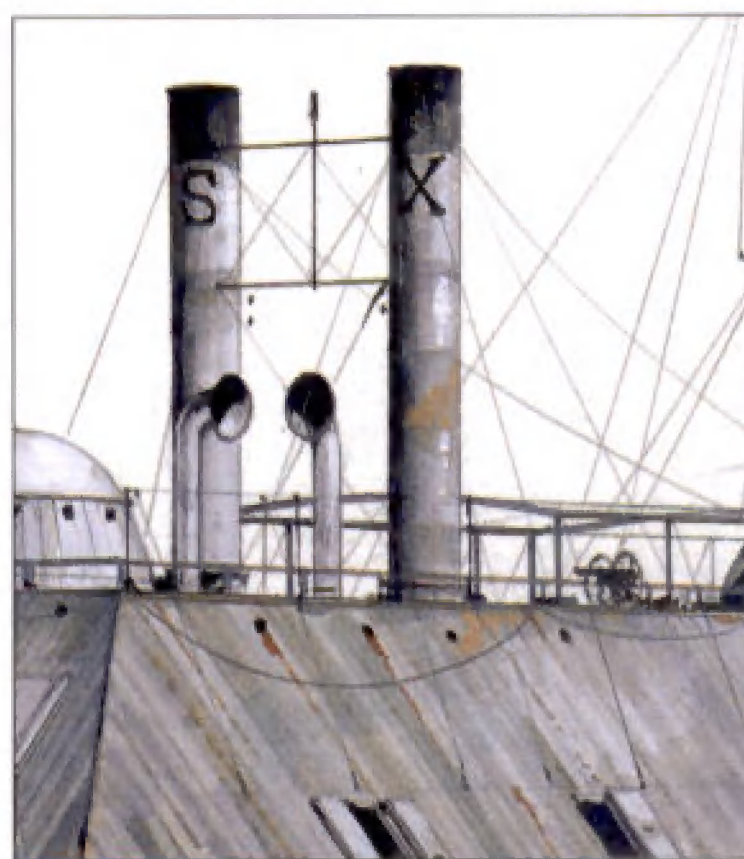
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Unrivaled detail

Union River Ironclad 1861–65

At the start of the American Civil War, neither side had warships on the Mississippi River, which was a vital strategic artery. In what would prove to be the decisive naval campaign of the war, both sides fought for control of the river. While the Confederates relied on field fortifications and small gunboats, the Union built a series of revolutionary river ironclads. The first seven were commissioned in January 1862, and within two weeks they were tried in battle. These ironclads spent the next two years battling for control of the Mississippi, fighting in a string of decisive engagements including the Battle of Mobile Bay. This book explains how these vessels worked, how they were constructed, how they were manned and how they were fought.

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